VIDEO PRESERVATION:

SECURING THE FUTURE OF THE PAST

Digitized by the Internet Archive
in 2015

https://archive.org/details/videopreservatio00boyl

VIDEO PRESERVATION:

SECURING THE FUTURE OF THE PAST

VIDEO PRESERVATION:
SECURING THE FUTURE OF THE PAST

by Deirdre Boyle

Published by Media Alliance
New York, New York

Video Preservation: Securing the Future of the Past

Copyright © 1993 by Deirdre Boyle and Media Alliance.

All rights reserved. Printed in the United States of America. No part of this book may be used or reproduced in any form or by any means or stored in a database or retrieval system without prior written permission of the publisher except in the case of brief quotations embodied in critical articles and reviews. Making copies of any part of this book for any purpose other than your own personal use is a violation of United States copyright laws. For information, address Media Alliance (see below).

This book is sold *as is*, without warranty of any kind, either express or implied, respecting the contents of this book, including but not limited to implied warranties for the book's quality, performance, merchantability, or fitness for any particular purpose. Media Alliance and the author shall not be liable to the purchaser or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused directly or indirectly by this book.

Publication designed by a. piccolo graphics. Printing by Tower Press.

Video Preservation: Securing the Future of the Past was made possible with public funding provided by the National Endowment for the Arts and the New York State Council on the Arts. Additional funding and support was provided by the Benton Foundation, National Alliance for Media Arts and Culture, the Consortium of College and University Media Centers, and the Bay Area Video Coalition.

Orders for this book should be addressed to:

Media Alliance
c/o Thirteen/WNET
356 West 58th Street
New York, NY 10019
Phone: (212) 560-2919

Dedicated
to video history's pioneers
and
future generations of viewers

In the words and deeds of the past
there lies hidden a treasure that men may use
to strengthen and elevate their own characters.
The way to study the past is not to confine oneself
to mere knowledge of history but,
through application of this knowledge,
to give actuality to the past.

—The I Ching,
translated by Richard Wilhelm

The profit of the future is the past.

—Chinese fortune cookie

TABLE OF CONTENTS

Foreword 1

Introduction:
Let's Go to the Videotape? 3

Media Alliance Survey
of Video Collections 5

Symposium on Video Preservation 17

New Partnerships, Strategic Alliances:
A Preservation Update 33

Glossary 41

U.S. Video Recording Formats:
Current and Obsolete 47

Facilities for Cleaning and
Remastering Videotape 51

Additional Resources 55

Bibliography 61

FOREWORD

Media Alliance is a nonprofit membership organization that works to develop the media arts field in all its diversity. Activity is divided among the following areas: expanding resources, support and outlets for the independent media arts; facilitating networking and information-sharing about issues and opportunities; and providing programs and services that respond to membership needs.

As part of a long-term advocacy plan, Media Alliance launched an initiative to address the critical issue of video preservation in 1991. With advice from a steering committee comprised of members of New York's media arts community, we have been assessing the state of video preservation, coordinating an exchange of information among interested parties, promoting collaborative solutions to common problems, and stimulating national attention to the issue.

We began by identifying over 200 people involved in video preservation. We then surveyed institutions and individuals with video collections around the country, asking respondents to describe their collections and methods of management, their preservation efforts and modes of funding, and their ideas about the critical issues that lay ahead.

In partnership with the New York State Council on the Arts, Electronic Media and Film Program, Media Alliance convened a symposium at the Museum of Modern Art in New York on June 14, 1991. Key people concerned about video preservation were invited to discuss their experiences, share information, and make recommendations for the future.

To disseminate the information gathered at the symposium, an abbreviated report of the event was published in *The Independent* (October 1991), the journal of the Association of Independent Video and Filmmakers. This publication is an expanded and updated version of that earlier report.

We are most grateful for the vision and support of all who participated in this initiative. In particular we wish to thank Deborah Silverfine and Gerald Lindahl of the New York State Council on the Arts (NYSCA), who initiated assistance and advice which continued throughout the project. In addition, we wish to thank: Arthur Tsuchiya and Brian O'Douherty, National Endowment for the Arts (NEA); Julian Low, National Alliance for

Media Arts and Culture (NAMAC); Catherine Egan, Consortium of College and University Media Centers (CCUMC); Charles Benton and Larry Kirkman, Benton Foundation; and Sally Jo Fifer, Bay Area Video Coalition (BAVC) for responding to our request for funding support. We also wish to thank the presenters at the symposium—Leanne Mella, Elizabeth Scheines, Mark Schubin, David Shulman, and Deborah Silverfine—whose knowledge sparked lively discussion and enthusiastic plans; to Mary Lea Bandy of the Museum of Modern Art, who extended the museum's hospitality to participants; to MoMA's Barbara London and Sally Berger, who organized a screening of restored video works; and to Skip Blumberg, Joan Jonas, and Philip Mallory Jones and the other artists whose participation reminded us that the independent perspectives revealed in their work are of central importance to this issue.

And finally, a very special thanks to Deirdre Boyle, author and consultant for Media Alliance, who sustained a broad perspective about video preservation issues and eloquently synthesized and articulated this information for our readers.

Mary Esbjornson

Executive Director, Media Alliance
Project Director, Video Preservation Initiative

INTRODUCTION: LET'S GO TO THE VIDEOTAPE?

That familiar refrain not only conjurs up the highlights of sporting events, it embodies our electronic era's reliance on the video medium to capture and replay historic moments both personal and public. When a lone citizen with a handicam documented a brutal act of racist violence by the Los Angeles Police Department in 1991, the power of video in the hands of the powerless became national news. Around the globe video has played a role in changing not only the structure of information but the structure of political and social order. The "people's revolution" in the Philippines was assisted by video-cassettes of the assassination of Benigno Aquino, duplicated en masse in Hong Kong and smuggled into an island nation which they helped knit together in common resolve to overthrow a dictator. Elsewhere, notably in Eastern Europe and Latin America, video has become a critical medium for underground protest and social change. Sharing the spotlight of history with the pamphlets and broadsides and newspapers of the past, video has become a medium of discussion and dissent. Its significance as a primary channel of information effecting social and political change is undeniable.

While revolutionizing public discourse video has also altered our private lives. Video has become a means of applying for a job, screening dates, documenting insurance inventories, and communicating with loved ones during a distant war. When used for security surveillance in banks, stores, homes and prisons, video has evoked the Big Brother of Orwell's *1984*. More than a medium for time-shift viewing of television, more than MTV, more than a cheap way to see box-office hits in the comfort of one's home, more than a handy baby-sitting device, video has become an integral part of our lives, recording baby's first steps as well as the first steps taken on the moon.

But when we "go to the videotape" five, ten or even twenty-five years later, what appears on the screen? There is the prospect of certain tragedy as we "go to the videotape" only to find our history reduced to snow on a flickering TV screen. Whether the loss of memories exists on the scale of a single life or that of an entire nation, the loss of primary documents recorded on videotape threatens our cultural legacy. If we can not recall who we were, we become prey to the "spin doctors" of history, free to reconstruct and re-interpret at will. Reading about the Kennedy-Nixon Debates of 1960 is not the same as viewing them; reading about the Gulf War in *The New York*

Times is not the same as seeing CNN's news reports or the Gulf Crisis TV Project. At stake is access to information vital to an independent understanding of our life and times.

For anyone concerned about the future of our cultural legacy as recorded on videotape—whether it be the video artist whose early work will no longer play or the archivist with thousands of tapes to maintain—the challenges of video preservation are considerable, the responsibility awesome, the problems numerous, the resources spare, the urgency great. This monograph is devoted to helping everyone in the quest to retrieve the electronic past now and in the future.

The text is straightforward in its design and intention: to offer an overview of video collections and preservation efforts in the United States today; to provide some practical information on common questions about technical, managerial and philosophical issues posed by preservation; and to stimulate new initiatives and better funding to secure the treasury of video history for future generations. It opens with an overview of video collections drawn from Media Alliance's 1991 survey. Next is an expanded report on the video preservation symposium convened by Media Alliance in June 1991. Then a 1993 update reports on collaborative efforts of many symposium participants and the latest thinking about solutions to preservation challenges. Also featured are: a glossary of video terms; a list of U.S. video recording formats, current and obsolete; a list of facilities that clean and remaster videotape; a list of additional resources—individuals with expertise in various aspects of video preservation as well as institutions and associations that assist in archival efforts; and a bibliography.

I wish to thank the following for their help in compiling the information contained herein: to Mark Schubin, who supplied the glossary and listing of video formats; to Stephen Vitiello and Leanne Mella, who prepared the first directory of facilities, and Rebecca Schreiber, who helped update their list; to Tom Borrup, Roger Bruce, Margaret Byrne, Catherine Egan, Sally Jo Fifer, Jon Gartenberg, Ralph Hocking, Luke Hones, Terry Irwin, Lillian Katz, Wellington Love, Steve Seid, David Shulman, Steina and Woody Vasulka, and Stephen Vitiello, among others, who provided important insights and new information about what has happened since 1991.

The first draft of this monograph was written at the Blue Mountain Center, and I am very grateful for that lovely and supportive environment in which to work. I wish to thank Mary Esbjornson, executive director of Media Alliance, for inviting me to be project consultant and for providing me with her superb guidance and editorial judgment, and Rebecca Schreiber for her generous help.

MEDIA ALLIANCE SURVEY OF VIDEO COLLECTIONS

MEDIA ALLIANCE SURVEY OF VIDEO COLLECTIONS

To assess what individuals and institutions have been doing to preserve their video collections, the Media Alliance developed a questionnaire sent to 111 individuals and institutions located mainly in the Northeast Region—primarily in New York State—although collections across the United States and Canada were polled. We received 62 replies, a gratifyingly high return rate of 56 percent.

Respondents supplied data about the following:

- **collections**, including descriptions of collection holdings (numbers of tapes, formats, years spanned, percentage of tapes in need of restoration)
- **collection management**, including procedures developed for cataloging, shelving, and inventorying tapes
- **preservation**, including environmental factors for storage, efforts at cleaning and remastering tapes as well as ongoing procedures for collection maintenance
- **funding** for preservation
- **critical issues** ahead

COLLECTIONS

The video field has always been a hydra-headed beast, a factor much in evidence in the diversity of types of organizations and collections surveyed. To the organizational categories provided—libraries, archives, distributors, producers—respondents added museums and media arts centers. Interestingly many checked off several categories, such as the media arts center that archives, exhibits and distributes video as well as provides an in-house viewing (or study) collection. Although some organizations do not fit neatly into any one category, the following breakdown by **primary** activity sorts respondents into the following: libraries/archives (22), media arts centers (16), museums (9), producers (with special collections) (10), and distributors (4). (A list of survey respondents appears at the end of this chapter.)

ARCHIVE VS. LIBRARY

A dictionary definition of an archive and a library does little to differentiate them when video is concerned. Given the reproducible nature of video, it is virtually impossible to ascertain the provenance of a tape through physical inspection alone. Electronic media demand a much more flexible concept of archiving than has traditionally been applied to paper documents. The terms library and archive are used interchangeably by the independent media field and so have been used interchangeably in this report. Professional archivists distinguish an archive as a collection of primary source material (whether this be camera originals, broadcast masters, best existing copies, only existing copies, etc.); usually such material does not circulate, although this can never be assumed.

The above typology of organizations does little to predict the kinds of collections these organizations may house nor the varied approaches taken toward collection management and preservation. Although we asked for a description of each collection, replies were varied—from richly detailed statements to sketchy notes—and raised as many questions as they answered.

Sixty respondents provided data about the total number of tapes in their collections as well as their condition and need for preservation. Some collections had as few as 30 tapes and as many as 40,000. Nearly three-quarters of the respondents have collections under 1000 tapes, and one-third ranged between 100 and 500 works.

Only 30 collections estimated the numbers of tapes in need of preservation. This broke down fairly evenly into thirds: one third needs to rescue one-quarter of their collections, another third needs to rescue one-half, and the remaining third needed to salvage their entire collection. Only three collections indicated they needed no preservation; two of these had already cleaned and remastered their tapes. The remaining 30, who did not hazard numbers of tapes or percentages in need of help, explained they had neither time nor staff nor resources to inspect their collections.

NO TWO COLLECTIONS ALIKE

To suggest the variety of existing video collections, consider two art museums and three libraries that participated in the survey:

The Museum of Modern Art in New York has a video collection of 650 titles of independently-produced video tapes "which push the boundaries of genre and form" and were made since 1968. Archival sub-masters are stored on 3/4" and 1" tapes in a thermal vault at a separate facility. Study center copies are stored in-house on 3/4" cassettes and a small, unspecified portion of the collection is distributed.

The Carnegie Museum of Art in Pittsburgh houses three different video collections: 125 tapes by video artists, produced since 1970 and leased from distributors; video installations by three video artists; and a special

collection—the Warhol video collection—which will be housed in the Warhol Museum. The collections do not circulate; they include 1/2" open reel tapes made as documentation, 3/4" and 1" tapes and videodiscs plus an unspecified number of installations.

Compared with these very different museums, the diversity among libraries is even greater since public, academic, special libraries, and archives each house enormously different kinds of collections. Consider the following: a public library, a research library, and an academic library.

The Port Washington Public Library houses 1000 staff- and community-produced tapes on 1/2" open reel (1971-76) and 3/4" (1976-87); interviews with video artists on 3/4" for in-house use (there are 300 3/4" tapes in sum); independently-produced video art and documentary tapes on VHS for circulation; and commercially-produced feature films, documentaries and instructional tapes on VHS (there are 3000 VHS tapes in full; no breakdown on numbers of original, independent video productions is given). Due to lack of space and funds, the 1/2" open reel archive is stored in boxes in the basement with no on-going program to inspect, maintain, catalog or preserve them.[1]

The Dance Collection of the New York Public Library is a "comprehensive archive devoted to the documentation of dance in all its manifestations" and includes over 5000 videotapes of films and videos produced between 1900 and the present. Formats include VHS, Beta, 1/2" open reel, 3/4", 1" and 2" (1/2" and 3/4" PAL and NTSC formats are included). Preservation materials are held at a storage facility in a controlled environment; in-house copies are stored at room temperature and routinely cleaned and evaluated by an RTI video inspection machine. Some of the tapes are one-of-a-kind recordings.

The Avery Fisher Center for Music and Media at New York University's Bobst Library has a video collection that initially emphasized the visual and performing arts but the focus has broadened to emphasize documentaries, video as art, and independently-produced video and film. The collection's 2500 VHS tapes are reserved for in-house use or loan to instructors for classroom use. There are also an unspecified number of videodiscs. The collection is housed on compact metal shelves and routinely inspected twice a year and after every classroom use on an RTI machine. Most of the collection was purchased from video distributors, however, some original archival tapes have been acquired but not yet cataloged. The Tamiment Institute Library and the Wagner Archives, which focus on labor history, radical history and radical politics in the United States, are also housed at Bobst Library but they are not part of the Avery Fisher Center; much of their film and video materials has not been cataloged.

Significant video collections range from the personal library of individual video artists or activists—such as Ken Marsh's collection of

[1] Since the survey, the library has begun to clean its 1/2" tapes from the early 1970s. Because of the expense, remastering has been done on VHS.

People's Video Theater and Woodstock Community Video or Philip Mallory Jones' archive of the Ithaca Video Festival's nine-year history—to mammoth institutional video archives like the Vanderbilt University Television News Archive, which houses approximately 23,000 videotapes.

Even a cursory glance at the diversity of video collections polled made it evident why any call for a universal agreement on uniform standards for cataloging, cleaning and remastering techniques, archival formats or preservation priorities remains an elusive if not impossible goal. The answers to the problems facing video archivists require multiple options and increased sensitivity to the full spectrum of issues confronting varied video collections.

COLLECTION MANAGEMENT

Answers to questions about collection management ranged wildly from Rube Goldberg inventions of stupefying complexity (reminiscent of the quirky, imaginative, homegrown solutions characteristic of video's early days) to ultra-sophisticated interfaces with national information exchanges. Libraries and archives are more likely to use standard cataloging methods (eg. Anglo-American Cataloging Rules; Library of Congress Subject Head-ings; MARC-compatible formats) and belong to national information net-works like RLIN and OCLC than are media arts organizations, distributors and individual producers who have frequently developed individualized cataloging formats suited to their own needs.

PAPER CHASE TO COMPUTERIZATION

Although some depend on paper records—whether an index card file or inventory sheets—most organizations rely on computers and seem to be split between the MacIntosh and IBM PC, although the PC has an edge, especially in larger institutions. There is an array of database systems in use for cataloging, such as: PFS:File, Formula IV Database, dBase 3+, dBase 4, Filemaker, Filemaker Pro, Excel, Procite, MS File, and Star, plus various customized programs developed for individual users (eg. the deSaisset Museum, the Satellite Video Exchange Society, and Women Make Movies). Minaret,[2] a database software used by the National Moving Image Database (NAMID), includes over 70 specific fields for video; it is not the only detailed system, but given that it is MARC-compatible, it is appealing for anyone interested in participating in a national database.

Perhaps the most sophisticated approach to cataloging has been developed by the Long Beach Museum of Art, selected by the National Center for Film and Video Preservation (NCFVP) in 1987 to create a pilot computer database program for cataloging video. The museum's customized version of

[2] For more information about Minaret, contact: Cactus Software, 15 Kay Way, Morristown, NJ 07960-5604, (201) 540-0980.

dBase 4 incorporates important details such as copyright date, length, format, sound, creative and technical credits, funding, a short synopsis, and an indexing system by basic subgenre, ethnicity and issue identification. The program's compatibility with MARC/Minaret is currently under investigation.

The Metropolitan Museum of Art catalogs its collection into the Art Database for the Program for Art on Film and runs on Star[3] software; it can conform to MARC through a conversion program. Although there was considerable overlap in both museums' information fields, the collection emphasis on exhibitions at the Long Beach Museum of Modern Art prompted some specific questions not found in the Metropolitan's form. The specificity and quantity of information assembled for both these cataloging records is impressive, however, few video collections have the resources to answer all the questions posed by these archival forms.

CLASSIFICATION SYSTEMS

For shelving as well as cataloging purposes, some collections employ a two- or three-part classification system: they assign an in-house **classmark** to their holdings, identifying form (eg. F—film or V—video[4]; T—television or R—radio[5]) or genre (eg. live production—NCOC, dialogues—NCOW or TV program—NCOX[6]) or special collection. This is often followed by a two- or four-digit **code** to specify the format (or size) of the objects (eg. 1/2" open reel, 3/4" Umatic cassette, laser videodisc, etc.) which is then followed by an **accession number**.

Significant video collections range from the personal library of individual artists... to mammoth institutional video archives.

One variation on this theme is The Archives of Appalachia at East Tennessee State University, which is organized by special collections. A printed catalog circa 1981 provides the following information for the Broadside TV collection (1972-78): the classmark (eg. "BS" designates this collection) is followed by a number (eg. BS-168); next is (c) a brief description of the contents of the tape; then (plr) information about participants and recording location when available; (d) tape duration; and (cd) tape condition. All tapes were transferred to 3/4" Umatic cassette; there is no other information available, such as details about origination formats, dates of production or production credits.

---

[3] For more information about Star, contact: Cuadra Associates, Inc., 11835 West Olympic Blvd., Suite 855, Los Angeles, CA 90064, (213) 478-0066.

[4] Dance Collection, New York Public Library

[5] National Jewish Archive of Broadcasting

[6] Theater on Film and Tape Archive, New York Public Library

CENTRALIZED COLLECTIONS?

When it comes to organizing and shelving tapes, the options include: by accession number, format, artist name, genre, subject categories, special collections, and type of use. This last is perhaps the most important distinction and breaks down into three categories: in-house study or viewing collection; a distribution or circulating collection; an archival collection, comprised of preservation masters which do not circulate—indeed may never even be played—and which may include camera originals, edited masters, best existing copy or only surviving copy, among other possibilities. An organization may have all three types of collections, all of which may be shelved in-house (eg. Electronic Arts Intermix) or variously deployed in remote locations such as duplicating and fulfillment houses or thermal storage facilities. For example, Women Make Movies houses its viewing collection in-house, its circulating copies at a fulfillment house, and its video masters at duplicating facilities.

Few catalogs of video collections have been published; most are issued by distributors and those few archives that have printed one-time lists of special collections. Although some media arts organizations offer catalogs to their rental/purchase collections, they often have no guide to their archival holdings. For example, the New Orleans Video Access Center (NOVAC) provides a distribution catalog of selected tapes but has yet to catalog—or preserve—its archive of 500 tapes produced between 1972 and the present. Organizations often explain they have insufficient time, staffing, and funding to maintain a catalog, even for in-house use.[7]

The environments for video archives span down 'n dirty hovels to high-tech fallout shelters.

Most video collectors know environmental factors impact the life of tape, yet many are uncertain what the parameters of good archival practice are—the maximum and minimum standards for maintaining the life of a collection. Collections are housed in locked glass-shelved cabinets, in metal filing cabinets, on metal or wooden shelves, and in cardboard boxes. They are stored in everything from a barn to a basement to a closet in a thermally-sealed underground vault. Nearly half the respondents noted they had no temperature or humidity controls. Those who did had no more than a window air conditioner and, less frequently, a de-humidifier. Controlled temperatures ranged between 60°-70° F and humidity levels were set at between 50% and 60% RH. Only one-quarter of the archives are housed in storage vaults: of these, a few noted magnetic field protection and halon fire suppression systems.

Downtown Community Television Center (DCTV) noted that its collections, numbering several hundred tapes, were housed in

[7] The only specific information given about inventory procedures was provided by Port Washington Public Library, which uses a separate database program, Lotus 1-2-3, to inventory its circulating collection.

> *an old firehouse which has no central heat or a/c, has many leaks, drafts...the electricity seems to be irregular, with power fluctuations. Security is shaky, no buzzer, locks that don't fit, slip. Tape collections are protected from rain and dust by plastic overhead*

—hardly an archivist's dream. DCTV's experience is not uncommon for media arts organizations and for producers with special collections. The environments for video archives span down 'n dirty hovels to high-tech video fallout shelters.

PRESERVATION INITIATIVES

One of the simplest techniques practiced for maintaining a video collection has been to rewind or "exercise" tapes, which is followed on a semiannual, annual, occasional or infrequent basis. Another standard procedure is to regularly inspect and clean a collection using an RTI machine, a practice followed mainly in public and academic libraries. Such procedures, when coupled with care in storing tapes, can extend the life of video, but the effort to maintain and preserve a video collection is more complex, costly, labor-intensive, and time-consuming than these practical procedures suggest.

Since video history is a succession of generations of incompatible formats, most collections are faced with the necessity of transferring tapes recorded on obsolete formats onto contemporary formats and cleaning and remastering any tapes that will not play. Locating obsolete playback equipment, finding "experts" in cleaning and remastering techniques, deciding which new "archival" format is best are among the problems besetting anyone engaged in preservation.[8]

PRESERVATION MODELS

Although a number of individuals and organizations have begun preservation efforts, many have not. This may reflect the relative youth of some collections (eg. Los Angeles Contemporary Exhibitions (LACE) collection begins with work from 1980), but it is more tempting to correlate this with the fact that relatively little funding has been given over the past ten years for preservation, and what money has been spent has gone to a handful of established archival institutions.

Downtown Community Television Center, mentioned earlier for its perilous physical environment, estimates it has archived only 7% of its collection on Beta SP and has yet to receive any funding to assist this effort. The Video Data Bank in Chicago has begun a preservation initiative, cleaning

[8] The archival remastering formats currently employed include 3/4" Umatic cassette, 1" tape, Betacam SP, D2, and the laserdisc, in roughly that order. Some have remastered onto VHS, a decision dictated largely by cost-cutting considerations.

10-to-12 tapes each year on a monthly basis and remastering them onto 1" tape. Some other collections which have begun video preservation include the following:

The Television News Archive at Vanderbilt University has recorded national news broadcasts off-air as well as news-related special broadcasts and documentaries since August 1968. The collection consists of 23,000 tapes which, until May 1978, were recorded on 1" Type A open reel tape. In 1978 the Archive switched to 3/4" Umatic. With preservation grants totalling over $170,000 from the National Endowment for the Humanities and the National Historical Publications and Records Commission, all 1" tapes have been or are now being reformatted onto 3/4". Many of the tapes had deteriorated badly. Once the transfer is completed, preservation will be a normal part of the archive routine. Although 3/4" is considered a reliable and flexible archival medium for the present, when a stable, affordable digital format is available the Archive expects to adopt it, gradually converting the collection as time and resources permit.

Electronic Arts Intermix (EAI) began its preservation program in 1988 when it received $12,000 from the New York State Council on the Arts to research preservation and restore 25 tapes, cleaning and transferring them from their original formats onto a 1" master and a 3/4" distribution dubmaster. Since that time tapes have been transferred to 1", Beta SP and D2 formats. All cleaning and transferring to high-end formats is done out-of-house; 1/2" open reel to 3/4" transfer with time base correction (TBC) is done in-house. EAI sought out commercial, corporate, and nonprofit facilities which were essential to the process. For example, 1/2" open reel tapes were cleaned and transferred at Sony Corporation's facility in Alabama. EAI brought its 1/2" decks to facilities like Electric Film and Caesar Video where tapes were transferred to 1" or Beta SP through a TBC. One-inch open reels were transferred to standard 1" by Turner Engineering. Two-inch tapes were transferred at Unitel. EAI also reconstructed work from an artist's original 3/4" material and transferred it to D2. Finally, 1" and 3/4" PAL to NTSC transfers were done at Intercontinental Televideo, Devlin and Audio Plus Video.[9]

Collections are stored in everything from a barn to a basement to a closet in a thermally-sealed underground vault.

For collections remote from the resources of major cities, respondents suggest turning to local TV stations and local commercial production facilities for help in locating obsolete playback equipment and assistance in remastering. Both dry and wet cleaning processes were identified by respondents.

[9] Since the survey, EAI has assisted Nam June Paik in restoring a number of tapes he produced in collaboration with Jud Yalkut circa 1971-76. D2 is the archival medium, but Beta SP copies were also made so Paik could use these tapes in his on-going work. With the help of Steina Vasulka, EAI found the answer to the playback riddle posed by the endless loop video cartridges used by artist John Baldessari in 1971. Much of this early work is now back in distribution.

FUNDING

Most of the funding for video preservation has come from the New York State Council on the Arts (NYSCA) and the National Endowment for the Arts (NEA). The NEA monies have come from the Media Arts Program, the Museum Program, and the Dance Program to assist the Video Data Bank, the Long Beach Museum of Art, the Kitchen, and Cunningham Dance Foundation, among others. The NYSCA dollars have supported preservation initiatives by Anthology Film Archives, Visual Studies Workshop, Electronic Arts Intermix, and the Museum of Modern Art. The American Film Institute's National Center for Film and Video Preservation has given two grants for video: $15,000 to the Long Beach Museum of Art in 1987 to develop a cataloging model for video collections and a $10,000 grant to Electronic Arts Intermix in 1989 to initiate the video component of NAMID. With the exception of a John D. and Catherine T. MacArthur grant to the Carnegie Museum for the Warhol collection, no private monies have been allocated to support the preservation and cataloging of independent video archives.

CRITICAL ISSUES

Responses to the final question—"What is the most critical issue regarding video preservation?"—constituted an agenda for the future of video's past. The urgency of time passing and work being lost forever haunts the field, and many emphasized a need for speed in salvaging a rapidly deteriorating past. Some demanded cheaper, more stable archival formats or one universal format; others wanted cheaper storage facilities and cheaper cleaning and remastering costs. Some clamored for coordination of information, ways of avoiding duplication of efforts, more collaborations between archivists and videomakers. Many wanted standards set—for preservation, for storage, for cataloging, for prioritizing what gets preserved. But given video's roots in the anti-establishment Sixties, there is an inevitable tension between those who favor standardized, centralized, nationalized methods and those who believe in decentralized, low-cost, low-tech, how-to alternatives. Answers to the problems facing video archives seem to require multiple options and increased sensitivity to the spectrum of issues raised.

The priorities about which everyone seems to agree are: more money, more time, more staff, more cost-saving measures, more information, more guidance, and finally—more awareness that independent video deserves to be preserved.

RESPONDENTS TO THE MEDIA ALLIANCE SURVEY OF VIDEO COLLECTIONS

MUSEUMS

The Brooklyn Museum
The Carnegie Museum of Art
The deSaisset Museum
Long Beach Museum of Art
Los Angeles Contemporary Exhibitions (LACE)
The Metropolitan Museum of Art
The Museum of Modern Art
San Francisco Museum of Modern Art
Walker Art Center

LIBRARIES AND ARCHIVES

Academy of Motion Pictures Arts and Sciences
Anthology Film Archives
Archives of Appalachia, East Tennessee State University
Artists' TV Project, University of Iowa
Avery Fisher Center, Bobst Library, New York University
Cornell Cinema
Cunningham Dance Foundation
Dance Collection, New York Public Library
Dance Theater of Harlem
International Museum of Photography at George Eastman House
Maine Student Film & Video Festival
Media Study Department, State University of New York/Buffalo
Nassau County Library System
National Jewish Archive of Broadcasting
Northeast Historic Film
Pacific Film Archive
Port Washington Public Library
Rodgers & Hammerstein Archives of Recorded Sound,
New York Public Library
School of Art, Syracuse University
Television News Archive, Vanderbilt University
Theater on Film and Tape Archive, New York Public Library
WGBH Educational Foundation Archive

MEDIA ARTS CENTERS

Appalshop
Asian Cinevision
Center for New Television
Downtown Community Television Center
Experimental Television Center Ltd.
IMAGE
Intermedia Arts of Minnesota
International Center for 8mm Film & Video
New American Makers
New Orleans Video Access Center
911 Media Arts Center
Satellite Video Exchange Society
Scribe Video Center
South Carolina Arts Commission
Visual Studies Workshop
Washington Project for the Arts

DISTRIBUTORS

Electronic Arts Intermix
The Kitchen
Video Data Bank
Women Make Movies

PRODUCERS (with special collections)

Chuck Anderson
Jaime Davidovich
Philip Mallory Jones
Ken Marsh
New England Foundation for the Arts
Paper Tiger Television
Betty Puleston
Allen Rucker
Ira Schneider (Raindance Foundation)
George Stoney

SYMPOSIUM
ON VIDEO PRESERVATION

SYMPOSIUM ON VIDEO PRESERVATION

On June 14, 1991 Keiko Tsuno, co-founder of Downtown Community Television Center (DCTV), left the symposium on video preservation early and hurried home because DCTV was celebrating its twentieth anniversary with a party that evening. When she arrived at the lower Manhattan production center, she discovered a clumsy plumber had put a two-by-four through a pipe, flooding DCTV's tape archive. Amidst party preparations staffers scrambled to rescue tapes and set them out to dry. Later that weekend, a fire occurred uptown at public television station WNET. The blaze knocked out phone lines and smoke penetrated basement rooms where videotapes are stored. These near catastrophes dramatically underscored the urgency of video preservation. Whether ominous coincidence or elemental warning, the alignment of these events made it clear: *video is an endangered medium.* If we are to safeguard video's multifaceted history, preservation must become a national priority.

Over 60 participants from as far away as San Francisco and Toronto gathered in the trustees' room at the Museum of Modern Art for the day-and-a-half long symposium, organized by the Media Alliance and the New York State Council on the Arts (NYSCA). Artists, activists, cataloguers, curators, distributors, and librarians attended the event, which began with an evening screening of early video art and documentary tapes selected by MoMA's Barbara London with Sally Berger. After the screening Joan Jonas, Skip Blumberg, and Philip Mallory Jones spoke briefly on the importance of video preservation from the maker's perspective. Hoisting an old AV portapak camera in one hand and a wooden hoop she used in early performance tapes in the other hand, Joan Jonas said how grateful she was the audience realized video's artistic and historic importance. Phil Jones, who organized the Ithaca Video Festival during the Seventies, admitted he had lost track of the whereabouts of much of his own early work. The following day he discovered several archives had copies of tapes he thought were lost forever. His experience pointed up a recurring theme throughout the symposium: the essential preservation partnership between video producers and archivists.

Unlike the world of film, which has developed a funding base and core of professionals to carry out its preservation mission, video has yet to develop such an infrastructure. The symposium was the first to convene key figures involved in independent video preservation. Its purpose was to identify and share information about collections; to network information on

conservation, cataloging, and archiving techniques; to discuss priorities for future funding and services; and to interface with national archival initiatives.

COLLECTION MANAGEMENT

The morning session was devoted to issues of collection management and began with a report by this writer on the Media Alliance Survey of Video Collections. Next Elizabeth Scheines, systems manager and coordinator of the Program for Art on Film at the Metropolitan Museum of Art, spoke on how to organize and maintain a video collection. She began by explaining that assessment of a collection—going through the physical material to see what one has—is the first step in figuring out your priorities for preservation.

The first component of preservation is to secure a proper storage facility. This need not be a thermal vault, but can begin with an air conditioner in the room where you store your tapes. Next, determine how you want to use your tapes. Even if a collection is just for personal use, she urged thinking of setting it up as a research facility, if only to do your own research. This will make it easier when you want to interface your information with others.

The third component is to set up some rudimentary cataloging system (any system is better than none at all). It is enough to begin with a card catalog containing titles, running times, format, artist names, where you acquired it, and where you are keeping it. Start by marking the boxes of all tapes with an accession number. Since some works are untitled or duplicate other titles in a collection, accession number plus title will make life easier.

There are several logical approaches to shelving tapes. If it is your own work, chronological sequence may make sense. If you have a large collection of circulating (or playable) copies, then you will want to shelve this collection separately from your archival masters. Shelving schemes should be designed for maximum access to a collection for users and maximum safety for archival masters: *Never* shelve circulating and archival collections together.

STANDARD SYSTEMS?

Although standard cataloging systems are used, most people wind up devising their own. Computer software makes it relatively easy to customize a system. Scheines recommends dBase 3, dBase+ and dBase 4. In developing your own system, think ahead to who may be using it, not only today but in the future. You will want to share some information, but not all will be for public knowledge— eg. acquisition of rights information may be confidential—and this will affect how you program your PC. A good beginning is to be able to generate searches by title, artist, and accession number.

Standardized union cataloging systems exist in public libraries and museums, but they are geared to books and art objects, not videotapes. The Library of Congress set up MARC (machine-readable cataloging) as a national standard, and although it has been adapted to film and video, it is not ideal. The National Moving Image Database (NAMID), a project of the National Center for Film and Video Preservation (NCFVP), is a union system expressly designed for video and film. One advantage of interfacing with a union system is the ability to download cataloged information, saving time and effort over original cataloging when it already exists. If your title is a unique property, you may not be able to avail yourself of the time-saving properties of a union catalog, but sharing your information through a national database will help others search for information about tapes you hold.

Scheines doubts there will ever be a time when everyone has the same cataloging software and computer hardware, so there is no need to get rid of whatever system you already have. If you are beginning, you may want your computer software compatible with union software (eg. NAMID uses several software packages, including Minaret, which is MARC-compatible). Many wind up with two systems: an idiosyncratic internal cataloging system and a standardized external one, which is costly, inefficient, and cumbersome. But until there is an established, standardized, union cataloging system for video, Scheines recommends having both systems, however unorthodox the suggestion.

Standardization needs to be developed if we are to be able to search each other's databases, Scheines concluded. Being able to share information will help in identifying where tapes are located, deciding how to spend acquisition budgets, developing more targeted funding proposals, facilitating interlibrary loan of circulating tapes, and determining how best to allocate limited time and resources for preservation.

VIDEO "TRIAGE"

In the discussion that followed, video artist Tony Conrad raised the dilemma of how to assess a collection when tapes will not play. In response, David Shulman explained his "triage system," developed while producing an anthology of early portable video. When presented with a box of historic tapes that refused to play, he grilled the producers, jogging memories about what had been recorded, who shot it, and what was interesting about it. "While you'll miss things, it's one way of making decisions about what to restore," Shulman confided. Sally Berger, who worked with Shulman on the project, added that some producers are protective of their work and histories and may be reluctant to turn over unique copies of tapes to archivists or curators. Trust needs to be developed between artists and archivists if recuperation of the video past is to occur.

Kate Horsfield of the Chicago-based distributor, Video Data Bank, voiced concern about the fate of collections existing outside large institutions.

Work already in distribution is most likely to be preserved, she asserted. "What we're doing is deciding history based on factors we're living in this minute. But history is larger than that...." Echoing Horsfield, video artist Jaime Davidovitch commented: "When we are archiving materials, we are making judgments. We are preserving some works and disregarding others. Who is responsible? Who are the gatekeepers to be?" The author, who served as discussion moderator, noted this topic alone was worthy of its own symposium.

Jon Gartenberg, MoMA film cataloger, passionately voiced concern that the whole history of independent media may disappear because of prevailing economics and lack of attention. He reminded colleagues that there is a whole intellectual tradition of dealing with the organization of information. Individuals responsible for video collections can borrow upon the systematic approaches and expertise of film and print archivists. "People do not have to reinvent the rules," he said. Archive consultant Alan Lewis similarly urged people to associate with professional archive organizations on the local, regional, and national levels. Organizations like the Association of Moving Image Archivists (AMIA) offer basic manuals and documents outlining tried and true steps for dealing with collections.

CONSERVATION TECHNOLOGY

The first of two afternoon programs led participants through the complex realm of conservation technology. Panel moderator Leanne Mella surveyed video facilities in the metropolitan New York area, which range from full-service outfits—equipped with obsolete formats, time base correctors (TBC), signal processors, and the latest formats for remastering—to small facilities where you supply the obsolete format. Unfortunately, she found there is not much difference between the low- and high-end costs for preservation. Comprehensive costs range from $200 to $300 an hour to clean, restore and remaster a tape at a commercial facility. Most nonprofit facilities offer simple cleaning of 1/2" AV tapes and remastering onto 3/4" without a TBC—a fairly low-cost method for preservation since it is the price of remastering to contemporary formats that adds on the big bucks. In surveying users moderator Mella discovered institutions with large collections often falter in starting up a preservation effort when faced with the high cost of cleaning and remastering as many as 500 tapes earmarked for rescue. Many people said they were still waiting for reliable solutions priced within their means.

CLEANING SOLUTIONS

David Shulman provided an illustrated demonstration of the equipment and techniques he developed for cleaning 1/2" open-reel videotapes. Faced with combing through hundreds of portapak-era tapes that would not play, Shulman researched a reliable, affordable method for

cleaning and remastering, calling everyone he could think of—independent producers, tape manufactures, even NASA, which had faced unique restoration problems when its oxide tapes were submerged in the Space Shuttle disaster. This trail led him to consider 1/2" computer data tapes which predate hard and floppy discs. Both video tapes and computer tapes share a common problem—"stiction"—in which contamination of early formula tape stock causes the back to adhere to the oxide. Shulman found a company that manufactured a machine used for maintaining computer tape, experimented and adapted its design to accommodate video, and consulted an engineer who made the modifications.

His system incorporates self-forwarding dry wipes for both top and bottom sides of the tape and crystal blades which move against the surface of the tape, removing anything above the surface but leaving the oxide intact. (The tape is run both ways until all the debris comes off the tape.) No liquid cleaning solutions are used. He supervised the system design for torque and tension speed required for videotape and also developed a simple method for transferring open reel videotapes onto computer reels. His machine has an electric eye that detects imperfections such as severe head damage or holes in the tape: it stops the tape and lets you diagnose how to fix it.

Since remastering is expensive, Shulman had to be selective. Once tapes were cleaned, he did one playback and videotaped the original program off the monitor. Plugging in time code for editing, he used the off-screen copies to do his fine cut, then went back to the originals, locating precise sections to remaster. If he had it to do over, he said he would have added a VHS feed from the playback deck, producing a second-generation copy of the historic material in addition to the off-screen copy with time code. In lieu of finding hard-to-come-by early model TBCs, Shulman used a hi-end TBC with full window correction capabilities and frame storer capacity. Some tapes required a proc amp first whereas others (notably CV tapes, which are particularly TBC-unfriendly), had to be transferred onto another format, like Umatic or Betacam, before putting through the TBC. Even tapes with stretching problems proved susceptible to super TBCs.

A common myth, according to Shulman, is the tape that will play back only once. This is something he never encountered nor did he run across tapes with blocking, a problem peculiar to acetate, where due to excessive heat exposure a tape actually melts.

Shulman explained his basic rule of thumb: "If a tape will playback and you can watch it on the monitor before you remaster it, even if you encounter lots of problems when you try to put it through a TBC, the chances are good that if you really have the time, patience, budget, and right equipment, you will ultimately be able to remaster just about anything that will play back." He remastered tapes within six months of cleaning but noted some required re-cleaning due to the on-going process of self-contamination, and so he suggested remastering as soon as possible after initial cleaning.

TO LAST PERFECTLY FOREVER

Video engineer and consultant Mark Schubin, the symposium's "Mr. Wizard," provided an illustrated technical lecture on video tapes and discs. Schubin began by differentiating the three media involved when archiving video: the medium the artist used, the one the archive has selected to preserve the artist's work, and the one the exhibitor uses to circulate it. Often the ideal format choice for these three uses will not be the same. Since no video medium has lasted more than 30 years, chances are good that the artist's medium will not be the medium the exhibitor or archivist chooses. Other criteria such as cost, speed, flexibility, and capacity will dictate format. Exhibitors will also be influenced by such factors as simplicity of use, commonality, and repeatability of playback. When the medium for each use is not the same, one runs into transformation loss (using one format to store another) as well as generation loss (degradation caused by copying a tape).

Schubin weighed the advantages and disadvantages of the various exisiting formats for preservation. Although 35mm black-and-white film can last 100 years and probably 200, since silver halide as an image-storing mechanism has been around nearly that long, its disadvantage is transformational loss. Transferring video to film changes it most from what the artist originally intended. The advantage to using optical disc is that it is a no-contact medium. The player will not hurt the disc and flinging discs like frisbees will not hurt them much either. But discs have the shortest history (since 1978), and they have already developed major problems. Thus tape is the most likely candidate for a video preservation medium, even though no one can say how long it will last.

Video is an endangered medium... preservation must become a national priority.

TAPE AND ITS AFFLICTIONS

Videotape is comprised of at least two layers: (l) the magnetic layer or **paint**, which consists of **pigment** (ie. magnetic material) and **binder** (a combination of glue, lubricant and anti-fungal agent that holds magnetic material down on the tape and goes through the machine without binding it; it is the secret ingredient, what makes each manufacturer's tape different from another's); and (2) the **base**, the plastic film of the tape, usually a polyester and the thickest part. The base often has a back coating, a sort of lubricant, which provides optimal friction and is also conducive (which means it deletes the static electricity charge and prevents attraction of dirt). In addition, there are also layers of air between the layers of tape, highly important when the tape is stored.

Magnetic material possesses two important properties: **coercivity**—how much magnetic force it takes to erase tape, and **retentivity**—how much recorded magnetism you are left with after you

record the tape. Both are determined by format. So long as you are dealing with oxide tape, there is no cause to worry about the magnetic material: it will not get erased. It would take a tremendous amount of magnetic force for tape to start losing its magnetism.[10]

The only serious magnetic problem is **print through**, the magnetization of one tape layer by another. For audiotape, it is noticeable when you get a pre-echo—a muffled sound that precedes the recording. This occurs only at longitudinal audio frequencies and is a problem for ordinary audio recorded on videotape but not for digital audio on videotape. For analog video, print through's effect is increased noise; for digital video, it is increased errors. Print through is always worse heading towards the outer layer of tape. Leaving the tape tails out, then rewinding to play back will reduce the occurrence of print through.

Binder deterioration is caused by hydrolysis, when water breaks down into a hydrogen ion and a hydroxyl ion and causes chemical deterioration. Very high humidity and condensation are the chief culprits, causing softening and brittleness. High temperatures also cause **shedding** (loss of oxide from the magnetic layer), which is not so serious because it is the upper level of the oxide, and **adhesion** (sticking between layers of tape). **Stiction**, a contraction of stickiness and friction, can be caused by either the binder being soft and sticky and grabbing onto things or the binder being soft and pressed extremely smooth in storage. Metal tape has no binder, which could be great, since the binder is unquestionably the worst factor for tape storage. But metal tape has an even shorter history than oxide tape, and in that brief history problems have occurred. Another common binder problem for videotapes made prior to 1970, before antifungal agents were added, is the growth of mushrooms on the tape.

Since the base produces static, it attracts dirt—tape enemy number one. Other problems caused by the base include deformation, when the tape is wrinkled or **cinched** (a problem most likely to affect tape made before the addition of back coating, which reduces static by reducing the charge). **Stretch** and **shrink** are not critical problems, since most TBCs can handle them, but sudden temperature change can lead to cinching since the hub of the reel will expand or contract at different rates than the tape, causing it to stretch or loosen and eventually cinch. A stiff tape, which people like for editing, may not make contact in the edges on a stationary head, causing poor audio and even poor control track response. This will make a tape unplayable when there is nothing wrong with it beyond a head-contact problem. The 3M Company will groove the head so tape edges fall at this point: the head will wear but uniformly because of the grooves.

---

10 An exception to this rule occurs in libraries where demagnetizers are used to strip off magnetic coding used to help control the theft of books, magazines, records, etc. When videotapes are subjected to such devices, their magnetic material is endangered.

WET OR DRY?

Schubin opposes using chemical cleaning agents on old formats, explaining that introducing a new chemical factor into the unknown binder is just asking for trouble.[11] However, "As far as nonchemical cleaning goes, I'm not at all opposed to it," Schubin said, recommending something like Shulman's design, where the cleaning gauze is constantly moving to get rid of the bad material. Schubin recommended 3M's publication "Evaluating the Evaluators," which rates good and bad cleaners and explains how they work. Schubin did not suggest cleaning a tape every time it was played, but first time out of the archive was probably a good idea.

Cassettes and reels are the source of several problems. U-matic cassettes lack a lock, so reels are free to move around in storage, which can cause cinching. Open reels are subject to adhesive residue. If a piece of adhesive was attached to hold the tape in place, Schubin recommends snipping off two inches, the only sure way to get rid of the adhesive. Other problems encountered include lack of protection from dirt (exempt are D2 and D3, which completely seal the tape), mechanical deformation, improper manufacturing and design of reels, and thermal deformation (eg. when you leave a tape in a sunny car window).

Tape is the most likely candidate for a video preservation medium, even though no one can say how long it will last.

PLAYBACK MACHINES

Schubin does not recommend using any intercept cleaner on the playback machine. Commercial cassette cleaners invariably scrub away dirt from the center of the head and push it up and down into the grooves, clogging them. Dirt clogged on the heads then passes onto the tape which may cause it to fail to play. Instead, Schubin recommends cleaning the machine yourself with the proper cleaning swabs or, better, since tape is abrasive and cleans the heads through normal play, run a blank stiff tape like Sony's D16, but not too often or it will wear down the heads.

The playback machine can cause wind problems. **Popped strands**, when one strand of tape pops up on a coiled tape, can cause serious edge damage. Since the audio or control tracks are recorded on an edge, damage to the edge can affect the machine's ability to read the control track. Other wind problems include **stepping**, when a whole bunch of strands move out of alignment, and **windowing**, when a tape does not wind smoothly, causing a little window so you can look through the tape to the other side of the reel. The latter is not a problem until you put the tape into storage where it can fold over on itself and cause deformation. When it comes to tension, too much causes stretching and too little causes cinching.

[11] Other experts disagree with Schubin's caveat, citing their own success at using various proprietary wet cleaning solutions to attack specific tape cleaning problems.

Machine wear will cause tape stretch, poor wind, poor head contact, scratching and bad tape geometry. Mechanical and thermal stress can also be caused by the machine if something worn causes more friction than the tape can tolerate. Lastly, machines offer poor protection from dirt.

The easiest problem to fix is horizontal orientation of tapes. *Never store a tape horizontally, always store vertically.* Horizontal storage means winds will separate, causing stepping and edge damage.

ARE YOU COMFORTABLE?

Regarding thermal shock, very high temperatures (in excess of 120° F) will progressively cause cassette deformation, adhesion between layers, stretching, and eventual shrink. Never put a tape in an oven to dry it. Relatively high temperatures will affect creep, print through, and shrinkage. Conversely, low temperatures (in excess of -40° F) will cause a brittle binder and some base shrink. The higher the humidity, the more severe the hydrolysis, the greater the risk of tape stretch. Low relative humidity causes static buildup. If you keep your archive at a very low humidity, you will need two days before playing a tape to allow it to adjust to playback conditions.

According to Schubin, ordinary magnetic fields are insignificant as are radiation fields. (To hurt your tape, it would take more radiation than would kill 250,000 people.) Schubin offers this general rule of thumb: When you are comfortable, so is your tape. That is not the *ideal* condition, which is to store it at low temperature and low humidity. At least try to ensure a normal environment with air conditioning and reasonable humidity.

DISC, DISC

Laser disc (which includes CD-V, CDI, CDTV, CD-ROM, and photo CD) has been around for 15 years, and four problems have already been found: (1) oxidation of the aluminum reflector, causing dropouts to become severe (Kodak has switched to gold for its photo CD); (2) delamination or separation of the reflector whereby the reflector moves and the disc cannot be played back; (3) occlusion of the protective coating, which happens when the disc gets scratched or dirt gets on it (dirt can be washed off a disc, but if you do not wash it, then it can eat into the plastic); and (4) severe warping, which is rare.

Currently the most popular disc is the magneto-optical disc, a form of optical recording where a laser is used to heat a spot above the Curie point, allowing an external magnetic field to affect its magnetism as it cools. All erasable discs use some version of this process. It may prove wonderful, but we have no experience over time with it as yet.

CHOOSING A REMASTERING FORMAT

When deciding which video format to choose for remastering, there are both technical and nontechnical considerations. What did the artist shoot in originally? Are there operator parts and services available? Can you exchange the tapes with others? Is the equipment commonly available? You must also decide on analog versus digital, composite versus component, and how much quality you want. When you digitize an analog signal, there will be a transformational loss. Otherwise, digital is a magnificent format, allowing you to make clones—copies with no generational loss, often surpassing the original with error correction and perfect digital signal added. The problem with digital is that it costs more and takes up more space than other formats—but this will change soon. Choosing composite versus component depends primarily on which format the artist used originally. If the artist shot in component, to preserve that quality you need to archive in component.

Schubin believes the future is in cassettes. Even discs will be in cassette form to avoid dirt and scratching. Magneto-optical discs are already in cassettes. There is an unquestionable trend towards digital tape and, for discs, the magneto-optical format, because it is erasable and recordable. Also on the horizon are coding techniques that will allow a CD-sized disc to record two-to-four hours of video, as well as perpendicular or quasi-perpendicular recording. Orienting magnetic information perpendicularly takes up less space, allowing you to pack in, say, a year's worth of recording onto a single VHS cassette. Currently this can be done on floppy disc, but not on a helically-scanned tape recorder. As for high-definition TV, it presents many more problems, according to Schubin, who claims it will not solve any of those you have right now.[12] He concluded that wood, glass and metal shelving were equally good for storage.

GETTING SPECS

Following Schubin's presentation, participants elaborated on a wide range of technical considerations. In response to archive consultant Alan Lewis' question about what equipment should be included in the written specs for a preservation job, Leanne Mella explained that some facilities charge extra for certain equipment, like frame synchronizers or infinite window TBCs. Others charge a flat rate (eg. $150 an hour) that includes all kinds of equipment. Find out what is being offered and then decide if it meets your needs, she advised. She added that she chooses a facility she has confidence in, has them evaluate a tape, alert her to any extraordinary measures and expenses, and provide an estimate. David

12 Since the symposium, several new formats have appeared. D5 is the latest digital format, joining D1, D2 and D3. All of these are "robust" and present no special problems, according to Schubin. There are two dramatically different formats on the market: DCT and Digital Betacam introduce compression, a new feature in video recording, and one which will require different thinking, especially when it comes to archival questions.

Shulman disagreed, finding an evaluation phase unrealistic. "It requires as much time and effort to evaluate an old tape as to fix it," he commented. "If you don't let the (original) tape run continuously from beginning to end, you will positively damage the tape and cause dropout wherever you stop it—severe damage at worst, minor dropout at best."

Tony Conrad lobbied for his own process of lubricating tape with a molecular-thin layer of silicon in lieu of abrasive cleaning. His aim is to get the tape moving on the heads more easily, avoiding what he termed "more exotic processes" and greater costs.

100 YEARS OF PRESERVATION?

When asked how long a 1" preservation master can last under optimum storage conditions and how long before it must be migrated to another medium, Schubin replied, "If storage is done right, most tape manufacturers say you'll get 100 years out of the tape." Asked whether 1" tape is optimal, he added, "If you're making a 1" tape and buying a bunch of 1" machines (so you'll always have them after the 1" format goes away) and you're maintaining those machines perfectly and storing the tape perfectly, it is arguable that 1" is slightly better than D2, because you can get TBCs for 1" that have greater detail than D2. But if any of those conditions are not the case, then—other than the fact that we have no history with them—either D2 or D3 would be better for composite and D1 for component."

Shulman added a pitch for a smaller format. "VHS is a surprisingly forgiving medium. It's not trying to lock into the servo or the signal. Without any TBC—dirt cheap—you can usually get a good transfer of open-reel tapes to VHS. You can't really edit it with color material or broadcast it. But you'll generally get a stable image relative to the original. We're talking about low-definition TV—250 lines of resolution. So you don't actually lose a lot of definition when you go to VHS. The decision is really about what you can afford."

FUNDING

The New York State Council on the Arts (NYSCA) is one of the few funders that has had a category of support for video preservation within the last three years. In her presentation, NYSCA's Deborah Silverfine stressed the need to rethink how to go about finding funding sources. The New York Council for the Humanities told her they were interested, and the New York State Library reported it has funds for preservation of materials, but they do not get many applications. The NEA has funded preservation through its Folk Arts, Media Arts, Dance, and Museum programs. NYSCA has funded studies and pilot projects for low-cost cleaning and remastering and assisted organizations in their storage, cataloging, and remastering projects. Another source is the National Historical Publications and Records Commission, an agency of the National Archives. The National Endowment for the

Humanities (NEH) has preservation in its guidelines, but rarely funds it. The video they have funded relates to oral history and local history.

Silverfine noted that funders care about audiences, urging tying preservation projects into exhibitions. "Taking work past the preservation stage to creating an audience and a literature for it is attractive to funders, not only in the arts but also in the humanities," she said. NYSCA staffer Gerald Lindahl remarked that there are also archive-specific funding sources. "If you are an archive or even *look* like an archive, you can ask for archive-related support." But he warned against approaching a funder saying, "I want to preserve all my tapes," since open-ended projects attract no support. It is far better to make a selection of tapes based on a historical rationale or identifiable framework.

Gregory Lukow, deputy director of the National Center for Film and Video Preservation (NCFVP) in Los Angeles, added a number of points about the difficulty of funding video preservation. "The last seven or eight years' experience has shown that developing new private funding for moving image preservation—which is what the NEA had in mind when [NCFVP] was created—has proven very difficult. Ironically, we are now going back to other avenues within the federal government. We think the NEH's Office of Preservation is a well-funded division. They've been concentrating on newspapers and brittle books, but our discussions with the director have led him to be more interested in funding moving image preservation." Lukow continued, "A number of preservation projects were funded through *access* categories of various federal agencies, in part because they don't quite know yet what videotape preservation is. They're confident about extending public funds for film preservation, because it promises a long-term payoff of hundreds of years, but there's no such promise with video preservation."

The NEH rejected NCFVP's application for a grant to develop a national public policy statement on moving image materials, with special emphasis on television and videotape preservation. But the NEH will entertain another application NCFVP is sending to the field for comments. "It's up to the independent video community to address its concerns in this early stage," he concluded.

"Video preservation has not become as strong as film preservation because the field hasn't put pressure on institutions—whether governmental, private, or otherwise," MoMA director of film Mary Lea Bandy forcefully added. "Some organizational means should be pursued to get lobbying efforts heard around the country."

PROPOSALS AND INITIATIVES

The symposium concluded with participants discussing ideas for new initiatives. Archivist Rick Prelinger urged the formation of a self-supporting Consortium for Safe Storage of Magnetic Media, which he saw as one way of avoiding the ever-shifting political decisions on what tapes get

saved. Although many were enthusiastic about the idea, librarian Mary Keelan criticized the solution for avoiding issues raised earlier. "Without some centralizing of information," Keelan worried, "the world will never know what exists and where it is." David Shulman raised another concern. Storing quantities of tapes in a single facility dependent on public funding and non-profit support poses an inherent, long-term risk: "What happens," he asked, "if you have a warehouse of tapes, and you can no longer maintain the facility?"

Robert Haller, general director of Anthology Film Archives, surprised the audience with an offer to store tapes in the archive's on-premise, climate-controlled facility. He quickly clarified that he was not promising to clean and remaster tapes "in 15 minutes," but simply provide storage space for work that could eventually be cataloged and remastered when time and money permitted. His object was to keep people from trashing their tapes.

ARCHIVE OPTIONS

Such storage space is critically needed. As Buffalo media professor Gerald O'Grady lamented, major collections are being lost because archives are not willing to accept them. O'Grady cited the difficulties experienced by the families of the late video artists Ed Emshwiller and Stan VanderBeek in locating appropriate archives for their collections. O'Grady noted that filmmaker D. A. Pennebaker has established a foundation in New York City called Living Archives and is accepting historic work for storage. Other storage options may be available at the Visual Studies Workshop in Rochester and Pacific Film Archive in Berkeley, California, although no firm offers were put on the table.

When selecting off-premises storage sites Alan Lewis counselled people to check the building's location—eg. is it near a railroad track where a propane tanker could torch it? Make sure environmentally sound storage can be proven. Have them deliver hydro-thermographic graphs regularly. Know what goes on in storage on weekends and overnight. Go there occasionally: check if overhead sprinkler pipes or air conditioner condensing units leak onto tapes. "And by all means, disperse your collection. Don't keep your masters and your distribution tapes in the same place. It's only asking for trouble," he emphasized.

Never store a tape horizontally,
always store vertically.
When you are comfortable, so is your tape.

NATIONAL MOVING IMAGE DATABASE

One major initiative currently underway is the National Moving Image Database project of NCFVP. The goal of NAMID director Margaret Byrne is to catalog 22,000 titles of video art. Each entry will provide title, maker, running time, and numerous other fields of information, including who

holds the tapes. The database currently has 6,500 titles, reported Byrne, who has targeted 10-12,000 titles by year's end. To help her assemble a master list, she appealed to those with information about historic tapes to contact her. Such information would give NAMID an invaluable reference point for identifying "lost" titles and forgotten works.

MoMA's Barbara London observed at the end of the long, productive symposium that "What we have been talking about all day is *trust*." Whether finding equipment buried in a SMPTE engineer's garage, getting cataloging information from elusive artists, unearthing lost tapes and hidden archives or lobbying federal agents and private funders to allocate monies for urgent preservation needs, video preservation requires trust among people working together to secure a vulnerable and significant history now and for future generations.

1991 VIDEO PRESERVATION SYMPOSIUM PARTICIPANTS

Callie Angell
Whitney Museum of American Art

Mary Lea Bandy
Museum of Modern Art

Sally Berger
Museum of Modern Art

Michael Bloom
Cunningham Dance Foundation

Skip Blumberg
Video Artist

Deirdre Boyle
Consultant

Mirra Brockman
Andy Warhol Videotape
Preservation Project

Roger Bruce
George Eastman House

Margaret Byrne
National Moving Image Database
National Center for Film and
Video Preservation

Henry Chalfant
Sleeping Dog Films

Karen Chase
Visual Studies Workshop

Cheri Coffin
Museum of Modern Art

Tony Conrad
Video Artist

Jaime Davidovich
Artists Television Project

Catherine Egan
Avery Fisher Center for Music
and Media, New York University

Mary Esbjornson
Media Alliance

Lucinda Furlong
Whitney Museum of American Art

Jon Gartenberg
Museum of Modern Art

Erica Gottfried
Wagner Labor Archives
New York University

Scarlett Graham
Television News Archive
Vanderbilt University

Ada Griffin
Third World Newsreel

Robert Haller
Anthology Film Archives

John Hanhardt
Whitney Museum of American Art

Fred Hatt
Film/Video Arts

Susan Hewitt
Media Alliance

Kate Horsfield
Video Data Bank

Dale Hoyt
The Kitchen

Terry Irwin
Andy Warhol Videotape
Preservation Project

John Johnson
Museum of Modern Art

Joan Jonas
Video Artist

Philip Mallory Jones
Video Artist

Lillian Katz
Port Washington Public Library

Mary Keelan
Mid-Hudson Library System

Alan Lewis
Audio-Visual Archives Consultants

Gerald Lindahl
New York State Council on the Arts

Vivienne Lipsitz
Port Washington Public Library

Barbara London
Museum of Modern Art

Gregory Lukow
National Film and
Video Preservation Center
American Film Institute

Ken Marsh
Marsh Communications, Inc.

Sam McElfresh
American Federation of Arts

Leanne Mella
Consultant

Dara Meyers-Kingsley
The Brooklyn Museum

Gerald O'Grady
State University of New York/Buffalo

Stephen Paintner
Archive of Broadcasting
Jewish Museum

Rick Prelinger
Prelinger Associates, Inc.

Herman Rapaport
Artists Television Project
University of Iowa

Elizabeth Scheines
Program for Art on Film
Metropolitan Museum of Art

Jan Schmidt
Dance Collection
New York Public Library

Edward Schoelwer
Dance Theater of Harlem

Rebecca Schreiber
Media Alliance

Mark Schubin
Video Engineering Consultant

Steve Seid
Pacific Film Archive

Susan Stone Shapiro
Channel L Working Group

David Shulman
Independent Producer
Backtime Video

Deborah Silverfine
New York State Council on the Arts

Lisa Steele
V Tape

Mary Ellen Strom
The Kitchen

Kim Tomczak
V Tape

Keiko Tsuno
Downtown Community
Television Center

Robin Vachal
Women Make Movies

Stephen Vitiello
Electronic Arts Intermix

Elizabeth Weatherford
National Museum of the
American Indian

Aviva Weintraub
Archive of Broadcasting
Jewish Museum

Lori Zippay
Electronic Arts Intermix

NEW PARTNERSHIPS, STRATEGIC ALLIANCES:
A PRESERVATION UPDATE

NEW PARTNERSHIPS, STRATEGIC ALLIANCES:
A PRESERVATION UPDATE

Thanks to the efforts of staff and volunteers, most of the hundreds of tapes damaged in the 1991 "anniversary" flood at Downtown Community Television Center (DCTV) were salvaged. A year later Keiko Tsuno recalled how it took a week to dry out the water-logged tapes, which included six years of tape originals as well as distribution copies. In the end about five dozen tapes had to be discarded as unrecoverable. The damage to the water pipe was $2000, but the damage to an archive of historic video was inestimable.

Until now DCTV, like many other media arts centers and individuals with video collections, has had no funding for any of its preservation needs. Although Tsuno has cleaned some 1/2" tapes, she remains dissatisfied with the results: pictures are poor and heads clog on playback. She has transferred several tapes to Betacam SP but urgently needs to clean and remaster about 40 more. DCTV's most important tapes exist on 1" and are now stored at the home of Tsuno's father-in-law, but the balance of the collection remains at the center, an old firehouse that is a disaster waiting to happen again. At the end of the interview, Tsuno sighed and said, "I almost gave up."

This sense of near defeat is not unique: other individuals and institutions have faced similar battles with unruly elements, natural and technical. Whether frustration is sparked by actual inundation or the psychological burn out occasioned by seemingly insurmountable problems in preserving video collections in a time of scant resources, some new developments offer the media arts community hope. These strategic alliances signal a movement toward consolidation, standard-setting, and resource-sharing that may benefit the entire field.

PRESERVATION: ART OR SCIENCE?

Although a national policy on video preservation has yet to be formulated, the NEA is encouraging challenge grant applications to support the capitol investment required to establish a national center for technical preservation. Since the Bay Area Video Coalition (BAVC) is the only remaining media arts center with state-of-the-art video equipment and professional engineering support, it is a likely center for a national technical

preservation service. BAVC executive director Sally Jo Fifer is enthusiastic about adding preservation to their mission of providing technical services and skills education to individual artists, community centers, and nonprofit institutions. She explained how the idea came in response to requests for such a service from many individuals and institutions like the Pacific Film Archive, the San Francisco Museum of Modern Art, and the San Francisco Public Library.

Thus far BAVC has received only seed monies for research and development. Operations Coordinator Luke Hones has been sorting through issues of timebase correction and researching synch inserters. He has been talking with Recortec, a Silicon Valley company that has worked with NASA to recover tapes, and with engineers from Sony and the major tape manufacturers. Without the technical assistance and financial support of such obvious partners, BAVC will neither be able to develop a practical service nor come up with the 3-to-1 match mandated by an NEA challenge grant. Optimistically BAVC already has clients lined up for the service, and they hope to be able to go on-line in late 1993.

Hones is intent on developing straight-forward technical procedures that will ensure consistent and reliable cleaning and remastering at an affordable cost. He is suspicious of those who claim preservation is "as much an art as a science" and hopes to "take as much of the *magic* out of the process as possible" by developing a quality-controlled, methodical approach. Fifer believes the thorny question of who decides what tapes get saved will become relatively inconsequential once costs for cleaning can be significantly reduced. BAVC's initial focus will be restoring 1/2" open reel formats and remastering them onto contemporary archival formats such as 3/4", 1" and Beta SP. (They eventually hope to be able to offer digital formats as well.) Whether they will be able to extend the service to include other rare or obsolete formats is unclear.

The Pacific Film Archive (PFA) is an integral partner in this proposed preservation service. BAVC plans to furnish PFA with cataloging information about all the tapes they restore. Producers who wish to keep their restored masters and submasters under archival conditions will be able to make arrangements with the Archive. Some criteria for what will be collected needs to be developed since the Archive's vaults have limited space, according to video curator Steve Seid.[13]

Without any acquisitions money, PFA is dependent on donations of significant work and also of obsolete format equipment. Seid has already

[13] Locating reliable archival storage space remains a critical issue for the field. Rick Prelinger's recommendation in 1991 that a "Consortium for Safe Storage of Magnetic Media" be created has yet to materialize. The idea of creating a holding facility where work waiting for proper preservation can be stored is still an elusive goal. The offers of storage by archives like Anthology Film Archives and the Pacific Film Archive are contingent upon donation of material to the archive. And even then, not all material will be accepted for deposit. Haller reports he is willing to store videotapes for collectors for a price, but to date he has had no inquiries. Other potential locations for archiving cited in the 1991 Symposium report have yet to respond.

begun to receive vintage models of early 1/2" recording equipment. "Ideally one wants the actual machine used by an artist," Seid noted. One of his great discoveries was locating a videotape in the vault where paintings are stored. It was marked "*Water*—Andy Warhol" with no further information given. By borrowing the artist's own deck from the Warhol Foundation, Seid was able to remaster what proved to be an historic tape made by Warhol for the Yoko Ono show at the Everson Museum in 1971.

Currently Seid is organizing a collection of Bay Area video, which features: the Quad master of *Media Burn* (by Ant Farm) and the 1968 TV series made by KQED and the Dilexi Foundation, which commissioned video work from such artists as Terry Riley (Music with Balls), Yvonne Rainer, Anna Halprin, Walter de Maria, Andy Warhol and Frank Zappa, among others. Historic video collections exist in the San Francisco Bay area, he noted, but some are unfortunately closed to the public and in danger of being lost forever. Without a video curator to supervise the arduous task of preservation, the deSaisset Museum in Santa Clara has been unable to meet requests for access to its important early video archive. Although a list of the deSaisset's impressive video holdings exists, no one has seen the work in over a decade. For a curator like Seid, the proximity of such inaccessible work is tantalizing and deeply frustrating. The situation points up the importance of joint efforts to insure access to the past before it is too late.

STRANGE BEDFELLOWS?

One strategy for institutions faced with the dilemma of how to preserve and access an historic collection without abandoning their on-going services is being explored by Intermedia Arts of Minnesota. Director Tom Borrup approached the Minnesota Historical Society with the idea of forming a preservation partnership. He proposed to the Historical Society that they take over the on-going preservation and archiving of Intermedia's historic regional video collection. Bonnie Wilson, curator of the Historical Society's Visual and Sound Collections, was already familiar with Intermedia's collection and its value, and agreed with alacrity. Although all the details remain to be spelled out regarding how tapes will be handled and who will have access to them, the first tapes will be presented to the Historical Society during 1993 when Intermedia Arts of Minnesota[14] celebrates its twentieth anniversary.

Intermedia's collection currently includes over 2500 tapes, a number of which are duplicates or copies of productions made elsewhere. They have all been cataloged from existing written information. Approximately 400 titles for deposit with the Historical Society will be selected for preservation by a panel convened by Intermedia Arts, and these tapes will be remastered from 1/2" open reel onto 3/4" with the help of a

14 Founded as University Community Video (UCV) at the University of Minnesota in Minneapolis, UCV changed its emphasis and name in the mid-Eighties, becoming Intermedia Arts of Minnesota.

$10,000 grant from the Warhol Foundation for remastering costs. Intermedia plans to be one of the first clients for BAVC's new service.

Intermedia's first priority was identifying candidates for the Historical Society's regional collection. They have already begun to identify additional subject collections within their archive—for example, dance tapes made by UCV during the Seventies—as well as other archives likely to be interested in acquiring these tapes. By isolating discrete collections, Intermedia hopes to be able to raise additional funds and locate new partnerships needed to preserve their extensive collection.

VIDEO'S UNION CATALOG

The Pacific Film Archive is one of many video organizations participating in the ambitious National Moving Image Database (NAMID) project. Before joining NAMID, PFA had its records on file cards but now that information is accessible to anyone in NAMID's computer network. According to Margaret Byrne, NAMID's project director, approximately 1000 fully cataloged video records were completed in 1992. About 15,000 additional records exist at "inventory level," and another 2500 are in an intermediary stage. By mid-1993, Byrne hopes to have 20,000 records begun.

NAMID is more than a cataloging project. Its mandate is to assist preservation, share cataloging, and facilitate access to collections. The aim is to help build new partnerships. "We don't have a lot of money," Byrne readily admits, so any amount given an organization is virtually insignificant. Along with the symbolic sum of $5000 or $10,000 comes advice from Byrne and her three staff members that is designed to help organizations invest wisely in hardware and software for cataloging and inventorying their collections. What NAMID gets out of the deal is information it needs for its national database. What the organization gets—besides computers and cataloging help—is support for their on-going preservation efforts. According to Byrne, when organizations keep good records, they are more attractive to funders who want to know what their money is going to preserve.

NAMID is selective about who it works with, rejecting charity cases and organizations that are weighted with a bureaucracy that skims the bulk of their funding off the top. Because their staff and finances are reduced in number, NAMID has chosen established organizations that stand to benefit the most from strategic assistance. Among those video organizations cooperating with NAMID are The Kitchen, the Video Data Bank, Pacific Film Archive, Electronic Arts Intermix, among others. Thus far the Project has prioritized artist tapes over documentaries.

By developing workable strategies for preservation, NAMID is able to enlist the cooperation of many collections and demonstrate the value of sharing cataloging records. Currently envisioned is a video and film preservation project of the work of media artist Shirley Clarke. Since

Clarke's video masters and film negatives are scattered about, NAMID hopes that assembling complete cataloging records of Clarke's work will help smaller collections make the case for preservation. NAMID is also working with Anthology Film Archives, which is organizing a retrospective of media artist Ed Emshwiller's work. By providing information about the whereabouts of an artist's work, NAMID can greatly assist the research necessary to organize and fund such exhibitions. Other plans include developing databases based on ethnic lines, such as African American, Asian American, and Native American databases.

PRESERVATION PROFILE: THE WARHOL VIDEO COLLECTION

One of the most extensive efforts at archiving the works of an individual artist was undertaken by the Warhol Foundation in 1990 in preparation for the Warhol retrospective at the Whitney Museum of American Art. The tape collection included 311 1/2" helical tapes produced between 1971-76, 11 1" Norelco tapes made in 1965, 1495 3/4" tapes, 328 Betacam tapes, and 201 1" C tapes all produced between 1977 and 1987. Thus far approximately two-thirds of the helical tapes have been preserved as well as the 3/4" tapes made for cable television and all the 3/4" tapes in which Warhol appears.

Mirra Bank Brockman was contracted to make the preservation choices for the Whitney retrospective. She then hired Terry Irwin as the technical manager in charge of assessing the collection, cataloging and preserving it. Irwin spent four months researching the problem during late 1990 and early 1991. He contacted the Department of Defense, NASA, and even the CIA in his search for scarce machines like the handmade EL3400. Success was discovering a machine with the serial number #1; frustration was fruitlessly searching for the elusive 1" Norelco. Although people often promised they could make transfers of such obsolete formats, after weeks they invariably gave up.

The biggest concern was saving the endangered 1/2" helical tapes.[15] In October 1987 a selection of tapes had been preserved on 1". Between August and December 1990 Irwin went back to the same lab and preserved 200 tapes. The biggest problem was cleaning them, especially the Kayrex tapes (a particularly unstable tape brand housed in a blue plastic box). Irwin decided to go with a wet cleaning method largely because the lab's technician had the best success with that method. Tapes were fed off the reel to a wet gauze and then fed back onto another reel; the distance allowed the solvent to dry. This technique typically required two passes.

The decision to use 1" as the archival copy was made based on

[15] Although some collections have experienced problems with 3/4" color tapes recorded as recently as 1979, the Warhol collection was not afflicted with problems except when tapes had not been fully rewound.

conversations with the National Archives staff and reports generated by the Ad hoc Subcommittee on the Preservation of Video Recordings (see bibliography). The rationale was straightforward: I" offers professional quality; many I" machines exist; the format is stable and is likely to be in use in the future; and it is affordable (at least for this archive). Although archives like the Museum of Television and Radio were big on D2 at the time, Irwin felt digital technology was too unstable since it is changing so rapidly. Not many machines would be available in the future, and although backward compatibility might be provided, there were no guarantees. After a month of information gathering, Irwin began remastering on 1" and subsequently concluded it was a good decision.

After the Whitney Retrospective, Brockman decided to leave the first facility that preserved the 1/2" tapes and found another one that did dry buff cleaning. Unfortunately, the preservation work proved unacceptable, and Irwin was forced to pull the plug. He was not able to get one usable play because the tapes were riddled with interference and distortion: tapes rolled over badly and could not deal with a TBC; images were dirty or fuzzy, and playback clogged heads. When the tapes were inspected by an independent technician, they proved to be scratched and stretched. As a result, the project lost nine months and incurred considerable additional expense.

Never let an expert's opinion sway you when your own experience says otherwise.

Irwin is quick to say he is not opposed to the dry process and admits the wet process can be abused: using the wrong solvent or gauze can destroy a tape. The traditional argument against the wet process is that it dries a tape and may damage the binder. And, if you damage a tape, you will not have it when a better preservation technique is developed later. But, argues Irwin, tapes have already lost their lubrication and, most importantly, have a limited life span, especially if made before the binder change.

BEWARE GLIB TIDINGS

The real issue in cleaning helical tape, according to Irwin, is the technician not the process. The critical factor is having a technician who knows how to spot a problem and how to solve it right away; what you do not want is someone who stumbles upon a solution while working on your tapes. Irwin strongly advises checking the credentials of people you hire to do such sensitive work. There is potentially a lot of money to be made in video preservation, and not everyone claiming to be an expert is one. "Never let an *expert's* opinion sway you when your own experience says otherwise," Irwin advises.

Irwin added that most advice about storage conditions is "nonsense." "Stable conditions are more important," he stated. "The shock of moving tapes from one temperature to another is more damaging than a one or two degree difference in temperature."

Irwin designed his own cataloging system, ultimately rejecting MARC records for an individualized system that met the collection's inventory needs. Using the Federation of International Film Archive's (FIAF) computer cataloging guide (see bibliography under Smither), he learned two basic rules of cataloging: be consistent; and make it work for you. He wrote his own programs using dBase 3+ and recommends *Understanding and Using dBase 3+* by Brady Computer (Rob Bowen Books).

Irwin began working with Steve Gong of the Pacific Film Archive on the idea of creating a Center for Obsolete Video Equipment in the Bay Area. In the process, he stumbled across Ampex engineers Ray Coustier and Pete Hammer, who had tried to create a Center for Obsolete Equipment over ten years earlier. Even though they tried working with organizations like the Association of Moving Image Archivists (AMIA), their efforts proved unsuccessful and eventually, suffering burn out, they gave up on the idea.[16] Their's was an idea whose time has finally come if only BAVC can succeed at creating its preservation service. Of course, locating obsolete equipment [17] is only part of what it will take to make old tapes live again for new audiences.

SEX, LIES, AND VIDEOTAPE

If historic video is to survive it seems clear the future lies in forming new partnerships—not just shot-gun marriages of convenience but committed relationships between freely consenting parties. And just as marriage is not the happy ending envisioned in fairy tales but the real-life beginning of compromises and negotiations, the partnerships detailed here have a way to go before we know how successful they will be. What is promising is that, despite limited financial support—and maybe because of it—these organizations are reaching outside the media arts community to embrace new alliances and attract new support for video preservation efforts.

At the 1991 Media Alliance symposium on video preservation Barbara London spoke about the significance of trust. That trust is being

---

[16] In 1991 Ralph Hocking of the Experimental Video Center in Owego, New York, proposed a "resurrection bus," a mobile service equipped with all the technology needed to clean and remaster old video. Hocking, who owns most of the archaic equipment, was willing to research the costs and logistics of making a service available to regional media arts centers and individuals if there was sufficient interest. He received no inquiries and has given up the idea. Similarly, an effort by NCFVP to compile a database of obsolete video equipment has been abandoned by Susan Dalton of the Center's Washington, D.C. office.

[17] Luke Hones found one book extremely helpful in tracking down information about what equipment was used to produce and post-produce historic work. *Access—Film and Video Equipment: A Directory,* edited by Nancy Legge for the AFI, lists the equipment holdings at major media centers circa 1978. Also useful to anyone interested in the history of image processing is the catalog edited by David Dunn for the 1992 Ars Electronica exhibition "Eigenwelt der Apparate-Welt," organized by Woody and Steina Vasulka. The English-language text of *The Apparatus World: Pioneers of Electronic Art* includes extensive information about instruments created by Robert Moog, Nam June Paik and Shuya Abe, Bill Etra and Steve Rutt, Eric Siegel, Stephen Beck, David Jones, among others. *(See bibliography)*

demonstrated by Intermedia Arts of Minnesota and the Minnesota Historical Society; by NAMID and its participating organizations; by the Bay Area Video Coalition and the Pacific Film Archive, along with regional facilities, engineers, and the NEA. Forming such partnerships is only one aspect of what is required to chart an agenda for video preservation, but it is a hopeful sign of progress. That moving image preservation has been chosen as one of the themes of the 1993 conference of the National Alliance of Media Arts and Culture signals growing national attention to this issue. Whether it is possible to create one routine method for cleaning obsolete tape remains to be seen. Whether one center can serve all the needs of the field or one cataloging system can meet the needs of all collections remains uncertain. But the movement toward agreed upon standards is surely a desirable end, especially given the emergence of entrepreneurs whose preservation sleight-of-hand may cost collections more than time and money.

What matters is that people are still trying to make the vulnerable and valuable video past last. By sharing resources—whether they be obsolete equipment, cataloging information, engineering expertise or dollars and sense—solutions to the difficult questions and thorny problems of video preservation begin to lie within everyone's reach.

GLOSSARY

GLOSSARY

A

Adhesion. Tape layers sticking to one another, usually as a result of excessive heat.

Advanced Decoders (Encoders). Devices for separating (combining) the components of NTSC with minimal ill effects, such as crawling color dots or pin-stripe moire patterns.

AFM. Audio frequency modulation, a technique of recording audio in such a way that it has higher fidelity than that offered by longitudinal tracks. It also reduces print-through concerns.

Analog. A signal with an infinite number of levels; an analogy of a real world phenomenon, such as brightness or loudness.

Azimuth Recording. Recording usually made with no space between adjacent tracks. Interference between tracks is prevented by recording tracks with two different angles of head gap alignment (azimuth). This prevents interference between luminance (brightness) signals (or, in the case of the D2 and D3 formats, between digital signals). To prevent color signal interference, color phase must be inverted or shifted between tracks, with special circuitry filtering out interference. Depending on how this circuitry is implemented, it can introduce a vertical color shift. Some formats combine the interference cancellation of azimuth recording with guard bands.

B

Back Coating. Optionally used on the opposite side of a tape base from the magnetic coating to provide optimal friction and to reduce static electricity.

Backing. A term sometimes used for a tape base.

Base. The plastic film of a tape.

Binder. The "glue" used to hold magnetic material to tape. Only metal evaporated tape has no binder.

Bit Rate. The rate at which bits (binary digits) must be recorded in a digital format, similar to peak white frequency.

C

Calendering. A smoothing of the tape surface performed at the factory. This process and the slitting of individual tapes from a sheet can leave residue that can cause dropouts. That is one reason tapes are shuttled end-to-end before use.

Chroma. A single color detail signal.

Cinching. Wrinkling of the tape by improper winding. The cinching, if not fixed, will cause increased dropouts. Also sometimes called windowing.

Clone. A copy of a digital recording indistinguishable from the original.

Coercivity. Officially, amount of magnetic force necessary to erase a saturated recording. Effectively, amount of force necessary to record.

Color-Under. A videotape format that can not record NTSC color directly. Color-under recorders must split color from brightness and record it at a lower frequency (under the brightness), recombining it on playback. "Dub" and "S-Video" connections eliminate these splitting and recombining steps.

Component Color. A videotape format designed to record color and brightness signals separately, before they are ever combined to form NTSC. If fed an NTSC signal, component-color recorders must decode it before recording and re-encode it after recording.

Composite Color. A single signal containing both brightness and color detail. An example is the U.S. color television system, NTSC.

Control Track. A longitudinal track of pulses without which most videotape players cannot play back.

Curie Point. The temperature at which all magnetic orientation is lost.

D

Detail. *See* Resolution.

Deviation. The amount of change between the lowest FM frequency (sync tip) and the highest (peak white). All other things being equal, the greater the deviation, the better the signal-to-noise ratio (color signal-to-noise in color-under is unrelated).

Digital. Able to be expressed by individual numbers (digits). A digital recording has three potential advantages over an analog one: potentially perfect playback (after digitizing restrictions), error correction, and error concealment. It also has three current disadvantages: cost, size, and quality limitation.

Digitizing. The process of converting from analog to digital. It sets a limit on both detail resolution and signal-to-noise ratio.

Direct Color. A videotape recorder that can record the exact signal that emerges from an NTSC color camera, without modifying it in any way. In an analog direct color recorder, the NTSC color subcarrier can interfere with the FM recording process to form a degradation called moire.

Dropout. Loss of signal during playback, possibly caused by a loss of magnetic material but much more often caused by increased head-to-tape separation, in turn usually caused by foreign matter.

E

Edge Damage. Usually caused by pack problems such as popped strands or stepping. Affects audio and control track sometimes preventing playback.

Emphasis. A boost of high frequencies to compensate for FM noise. The stronger the boost, the lower the noise but the more likely distortions will be introduced.

Energy. A term for coercivity and retentivity. All other things being equal, higher energy tapes offer greater signal-to-noise ratio.

Evaporated. One type of metal tape, where the magnetic material is deposited molecularly on the tape without a binder. It allows the thinnest possible tapes.

F

Film. If not referring to motion pictures, the base of a tape.

FM. Frequency modulation, used for recording detail information in all analog videotape formats. It has more noise in finer detail, compensated for through the use of emphasis.

Format. A specification for how magnetic information is to be recorded on a tape so that it can be played back.

G

Generational Loss. Degradation caused by tape copying.

Groove. An area often worn in stationary components, such as longitudinal heads, by tape. Since the edges are usually curved, the groove will prevent stiffer tapes from making good audio and control track contact. The problem can be eliminated either by replacement of the grooved component or by pre-grooving to allow future wear to be flat instead of curved.

Guard Band. Recording made with space between adjacent tracks to allow for a certain amount of mistracking without interference. In a guard-band recording, the track width and the head width are the same. In a non-guard-band, azimuth recording, tracks are narrower than heads.

H

HDTV. High definition television, usually defined as having twice the detail of ordinary television and pictures a third wider. Currently, commercial videotape recorders are available for only two of many proposed HDTV formats: 1,125 scanning line and 1,250 scanning line.

Head. An electromagentic device used to record or play magnetic information.

L

Longitudinal. Along the length of the tape. Longitudinal audio is audio recorded with a stationary head. All longitudinal tracks have fixed heads.

Luminance. Brightness detail signal.

M

Magnetic Characteristics. Coercivity, retentivity, and squareness.

Magneto-optical. A form of optical recording where a laser is used to heat a spot above the Curie point, allowing an external magnetic field to affect its magnetism as it cools. The induced magnetism can rotate the polarization of a beam of light to allow playback.

Metal. Non-rusted magnetic material, used for higher coercivity and retentivity (and, therefore, potentially smaller tapes). Since the metal can rust, it must be pre-coated either with a layer of rust or with some other material. There are two types of metal tape: evaporated and powder.

Minimum Wavelenth. The smallest magnetic domain that must be recorded on tape. It is determined by the peak white frequency or digital bit rate and the writing speed. In turn, it determines how narrow the head gap must be, how fine the tape formulation must be, and how sensitive the format will be to dropouts.

N

Noise Coring. Signal processing to reduce noise by eliminating certain signals. While noise coring can improve playback, it can also degrade additional generations of recording.

NTSC. National Television System Committee. The first NTSC (1941) standardized U.S. video at 525 scanning lines per frame with 30 frames per second; the second (1953) standardized color. The term is sometimes used interchangeably with composite color.

O

Orientation. Alignment of magnetic particles at the tape factory before the binder hardens. Different orientations are optimized for their formats.

Oxide. Iron oxide or rust, the most common magnetic recording material. Precise formulations vary magnetic characteristics and particle size.

P

Pack. The condition of a wound tape in terms of tension and smoothness.

Peak White Frequency. The highest desired FM frequency to be recorded; the frequency corresponding to the highest video level, peak white. In an analog video recording system, the higher this frequency, the greater the detail resolution (but not color detail in color-under) that can be recorded, all other things being equal.

Paint. The process of coating a base film with magnetic material; another name for the magnetic layer on a tape.

Popped Strand. A single layer mispositioned transversally in the pack.

Powder. Magnetic material to be combined with a binder for tape coating.

Print-Through. The magnetization of one tape layer by another. It is worse heading outward through a tape pack. For video or AFM, its effect is increased noise; for digital, it is increased errors; but for longitudinal audio, it can be audible sounds where they should not be.

Q

Quantization. One of three steps involved in digitization and the only one not even theoretically perfectly reversible. Therefore, quantization degrades analog signals.

R

Resolution. Amount of detail that can be perceived. For all 525-line formats, the vertical detail resolution for a still image is about 330 lines. The horizontal luminance detail resolution varies from format to format and from machine to machine. It is determined both by recording considerations and by color separation systems. Broadcast NTSC allows only 330 lines. Detail resolution is only one measure of quality.

Retentivity. Magnetic recording retained when all coercivity is removed. Sometimes called remanence.

S

Saturation. The point at which additional coercivity has no additional effect on the magnetic condition of a material.

Scratching. Gouging of the magnetic layer or even base as the tape passes through a machine. It is one of the most common sources of foreign matter.

Segmented. Requiring more than one track to form a complete picture. Before advanced digital processing equipment, this prevented stunt modes.

Shedding. Loss of oxide from a tape's magnetic layer, usually caused by deterioration of the binder.

Signal-to-Noise Ratio. A measure of picture quality (freedom from snow), related primarily to four factors: deviation, track width, tape energy, and signal processing (primarily emphasis and noise coring).

Squareness. How close retentivity is to the maximum magnetic recording created at saturation coercivity.

Stepping. Unsmooth packing, with transversally mispositioned sections.

Stiction. A contraction of the terms "sticking" and "friction."

Stunt Modes. Playback at other than normal speed with visible pictures.

T

Tension. Force pulling the tape during recording, playback, winding, and storage. Insufficient tension can be as bad as excessive tension.

Timebase. Period between synchronizing pulses, affected by machine functions, as well as by base stretch or shrinkage. Usually corrected by a timebase corrector (TBC), but extreme cases of stretch or shrinkage could make a tape unplayable.

Track Width. The width of a video track, determined by format specifications and tape speed. The faster the tape speed, the wider the video tracks can be.

Transverse. Across the width of the tape.

W

Windowing. *See* Cinching.

Writing Speed. Head-to-Tape contact speed. Much faster than tape speed in all videotape recorders, thanks to rotating head drums.

U.S. VIDEO RECORDING FORMATS:
CURRENT AND OBSOLETE

U.S. VIDEO RECORDING FORMATS: CURRENT AND OBSOLETE

Currently In Use
3/4″
Betamax
VHS
I″ C
Betacam
8mm
M-II
D-I
D-2
D-3
DCT
Digital Betacam
D-5

In Use but No Longer Sold
2″ Quad
M-Format (Hawkeye, Recam)
IVC 9000

Non-525-line Formats in Use in the U.S.
Kodak Ekta-Pro, Spin Physics (special cassettes, up to 12,000 frames per second)
Fisher-Price PXL-2000 (audio cassette-based camcorder, 15 frames per second)
HDTV (High Definition Television)—1,125 scanning line: 1″ analog, 1″ digital, Unihi 1/2″ cassette

Obsolete Formats (partial list)
2″ Tape—Helical
- Ampex VR-660, VR-1500, VR-8000 series
- JVC/Telechrome 770 series
- Sony MV, SV, UV series

Obsolete Formats (partial list)

1" Tape—Transverse

Asaca Quadruplex series

1" Tape—Helical

Ampex VR-5000, VR-7000, VPR-1 series
Diamond Power (also Craig) I" series
IVC (and Bell & Howell, Chester, Ricker, CPE, GPL, Singer, and RCA) 700, 800, 900, 1-11, and RGB series
Machtronics MVR series
Norelco (also Grundig) 1" series
Panasonic (also Concord) 1" series
Precisions Instruments 1" series
Shibaden 1" series
Sony (also GE) EV, PV series, original BVH-1000 format
Video Memory 1" series
Westinghouse 1" series

1" Tape—Conical

Westel WRC-150 series

3/4" Cassette—

Recortec HBU series
(AVEC Direct Color Prototype)

1/2" Tape—Helical

All pre-EIAJ formats
EIAJ-1 monochrome
Sony AV-5000 series (non-EIAJ color)
EIAJ-M color
EIAJ cartridge series
Norelco/Philips (post EIAJ, non-EIAJ)
Diamond Power/Craig (post EIAJ, non-EIAJ)

1/2" Cassette—

Akai VT-300 series
Arvin CVR series
Ampex/Toshiba Instavision, Instavideo series
CTI Cartrivision series
Norelco/Philips VCR, VCR-LP series
Panasonic VX-100, VX-2000 series
Sanyo/Toshiba V-Cord, V-Cord II series

8mm Component—

Hitachi CV-One

1/4" Tape—Longitudinal
- Ampex VR-303 series
- (BASF Cartridge Prototypes)
- Fairchild/Winston
- Roberts/Rheem
- Telcan
- (Toshiba Cassette Prototypes)

1/4" Tape—Helical
- Akai VTS 100, 110, 150 series

1/4" Cassette
- Bosch Quartercam series
- Funai/Technicolor CVC series
- Hitachi CV-One series

For information about Videotapes and Tape Formats:

Ampex
401 Broadway
Redwood City, CA 94063
(415) 367-4611

Fuji
10 Highpoint Dr.
Wayne, NJ 07470
(201) 633-5600

Maxell
22-08 Route 208
Fair Lawn, NJ 07410
(201) 794-5900

Sony
1 Sony Dr.
Park Ridge, NJ 07656
(201) 930-6563

3M
3M Center Bldg. 236-1B-06
St. Paul, MN 55144-1000
(612) 736-1195

SMPTE
595 West Hartsdale Ave.
White Plains, NY 10607
(914) 761-1100

FACILITIES FOR CLEANING AND REMASTERING VIDEOTAPE

FACILITIES FOR CLEANING AND REMASTERING VIDEOTAPE

These facilities were identified as having some of the equipment and skills required for cleaning and remastering video. This is not an exhaustive list of available facilities, and inclusion does not constitute a recommendation or an endorsement: *caveat emptor*.

Audio Plus Video
240 Pegasus
North Vale, NJ 07647
Diane Falciola; (201) 767-3800

Can clean and evaluate videotape using an RTI machine. Can transfer 1" B PAL to NTSC (Beta, 1", D2, M2) and can transfer to and from Quad PAL, Quad Secam, and Quad NTSC.

Backtime Video
594 Broadway
New York, NY 10012
David Shulman; (212) 431-7781

Restoration and reformatting of old format 1/2" open reel videotapes to contemporary formats.

Bay Area Video Coalition
111 17th St.
San Francisco, CA 94104
Luke Hones; (415) 861-3282

Setting up a low-cost, standardized video cleaning and remastering service for 1/2" open reel tapes, with remastering to Beta SP and 3/4" Umatic. Available for nonprofits and media artists.

Caesar Video
137 East 25th St.
New York, NY 10010
Jeffrey Antkers; (212) 684-7673

Can bump to any contemporary format through a range of signal processing equipment. Client must provide source deck.

Capitol Video
2121 Wisconsin Ave. N.W.
Washington, DC 2007
Don Crawford or Ken Miller; (202) 965-7800

Can transfer Quad to D2, 1" and Betacam.

CMS Video
19 Newtown Turnpike
Westport, CT 06880
John Godfrey; (203) 845-2382

Owned by former PBS video engineer who coaxed early video formats into broadcast form. Can clean Quad, IVC 1", Ampex 1", EV and CV series 1/2" and remaster onto D2, Beta SP, Betacam, Super VHS, Hi8, 3/4", 3/4" SP and VHS.

CTL Electronics
116 West Broadway
New York, NY 10013
C.T. Lui; (212) 233-0754

Can transfer 1/2" open reel AV or CV to Beta, 3/4" or 1".

Devlin Productions
1501 Broadway, Suite 408
New York, NY 10036
John Krams; (212) 391-1313

Can transfer 1/2" AV and CV, IVC 1", and 1/2" PAL to most contemporary formats, including premastering for videodisc. Restoration services include cleaning, signal upgrade with infinite window TBC, digital noise reduction, and image enchancement.

Electronic Arts Intermix
536 Broadway
New York, NY 10012
Ivar Smedstad or
Stephen Vitiello; (212) 966-4605

Can transfer from 1/2" open reel—including 1/2" color using a Sony AV 8650—to 3/4". All dubs are timebase corrected. Also has considerable experience preserving video art masters for distribution, including obsolete formats in American and European standards.

Intercontinental Televideo
29 West 38th St.
New York, NY 10018
(212) 719-0202

Performs 3/4" and 1" PAL transfers to NTSC 1" or Beta SP.

Merlin Engineering Works
1888 Embarcadero Rd.
Palo Alto, CA 94303
John Streets; (415) 856-0900

Renovates and modifies obsolete equipment.

Obsolete Tape Transfer
1234 South Hampton Rd.
Philadelphia, PA 19116
Joe Pagano; (215) 464-3158

Can transfer from the following: 1" Ampex, 1" IVC, Panasonic NV series 1", Sony EV series, Sony AV and CV, V-Cord 1/2" cartridge, Betacord 1/2" cartridge, Akai 1/4" open reel, Quad. All original masters are cleaned, frame synchronized, and remastered to any contemporary format.

Post Image Video & Transfer
135 Beaver St.
Waltham, MA 02154
Gary; (617) 894-0077

Can transfer S8mm film cartridge Polavision to 1".

Recortec Inc.
1290 Lawrence Station Rd.
Sunnyvale, CA 94089
Bob Davis; (408) 734-1290

Produces tape cleaning machines for video and data tapes that use slotted, vacuum-grid cleaning heads and supplemental cleaning devices.

Sony Magnetic Products of America
Technical Support Services
Highway 84 West
Dothan, AL 36301
Steve Tice or Danny Smith; (205) 739-7655

Tice built a machine to clean 1/2" tape and initially offered the service free to museums, libraries, and other non-profits, but he was inundated and can no longer offer the service. He will describe the machine to others who want to build their own. It is an audiotape transport stripped to bare essentials with sponges for dry cleaning solution attached to capstans.

Standby
536 Broadway
New York, NY 10012
Maria Beatty or Marshall Reese; (212) 219-0951

Can facilitate bumping to any format if client provides source deck.

Technisphere
21 East 19th St.
New York, NY 10003
Jack Goldman; (212) 777-5100

Can bump clean tapes from 1/2" AV and CV to Beta and 1" (soon to D2). Uses Panasonic 3160 and Sony CV machines.

Unitel Video Services
515 West 57th St.
New York, NY 10019
Carl Levine; (212) 265-3600

Can bump from Quad to contemporary formats.

Video Productions Division International Standards Conversion Corp.
333 West 52nd St.
New York, NY 10019
Bob Kramer or John Conavatchel; (212) 581-7312

Full-service broadcast-oriented facility which handles preservation of all world standards and most video formats, including early nonbroadcast 1", Quadruplex, 1/2" EIAJ and non-EIAJ formats, among others. Employs several cleaning processes, including two proprietary ones. Cleans and restores audio tapes using convection oven process. Has two-tier costs for broadcast and non-broadcast customers.

VidiPax
15 Washington Pl.
New York, NY 10003
Jim Lindner; (800) 653-8434

Cleans videotapes in most obsolete and current formats. Services include signal transfer and enhancement, digital noise reduction and image enhancement. Sells videotape preservation supplies. Converts to and from international standards in most formats.

ADDITIONAL RESOURCES

ADDITIONAL RESOURCES

Individuals and institutions are included because of their knowledge and experience in dealing with various aspects of video preservation—cataloging, collection management, restoration of obsolete tapes and equipment, etc. This is not an exhaustive list of media professionals in video preservation but merely some potentially helpful contacts. Inclusion does not constitute any recommendation or endorsement.

AMIA Secretariat
Association of Moving Image Archivists (AMIA)
c/o National Center for Video and Film Preservation
American Film Institute
2021 North Western Ave.
Los Angeles, CA 90027
(213) 856-7700

AMIA is a professional association established to provide a means for cooperation among individuals concerned with collection, preservation, exhibition and use of moving image materials.

Bruce Austin
Fast Rewind—The Archaeology of Moving Images
Rochester Institute of Technology
George Eastman Building
PO Box 9886
Rochester, NY 14623-0887
(716) 475-2879

Annual international conference devoted to moving image preservation and application. The third conference, held July 22-25, 1993, will explore preservation and the use of moving image documents.

Laurie Baty
Grants Analyst
National Historical Publications & Records Commission
National Archives Building
Washington, DC 20408
(202) 501-5610

Funds preservation projects including videotape.

Harry Boucher
Senior Field Engineer
Ampex
110 Commerce Dr.
Allandale, NJ 07401
(201) 825-9600 ext. 5264

Has personal collection of high band and low band obsolete tape machines including 1" A and 2".

Margaret Byrne
Project Director
National Moving Image Database (NAMID)
National Center for Film and Video Preservation
American Film Institute
2021 North Western Ave.
Los Angeles, CA 90027
(213) 856-7637

NAMID is an ambitious national effort at assembling cataloging information about film and video collections. Participants include Electronic Arts Intermix, Video Data Bank, Anthology Film Archives, among many other media organizations.

Ray Coustier
Senior Electronic Engineer
Ampex
401 Broadway, 3-53
Redwood City, CA 94063
(415) 367-2472

Designs and tests equipment at Ampex. Has large personal collection of NTSC obsolete equipment.

Steve Davidson
Director
Louis Wilson Media History Center
101 East Flagler St.
Miami, FL 33130
(305) 375-4527

Provides technical information on preserving videotape and offers some services including referrals.

Roger Easton
Director
National Archives of Canada
395 Wellington St.
Ottawa, ONT Canada K1A 0N3
(613) 952-4266

Established the Video Conservation Program in 1970. The Archives own obsolete recording equipment "in almost every format" and provide information on preservation of videotape and film.

Dan Einstein
Video and Television Archivist
UCLA Film and Television Archive
1015 North Cahuenga Blvd.
Hollywood, CA 90038
(213) 465-5687

Manages video preservation activities, including transfer of obsolete tape to contemporary formats, and has special expertise in early color tape preservation.

Stephen Gong
General Manager
Pacific Film Archive
University of California at Berkeley
2625 Durant Ave.
Berkeley, CA 94720
(415) 642-3036

The Archive is planning to work in conjunction with the Bay Area Video Coalition to catalog and/or store cleaned and remastered work restored at BAVC's facility. Long-time interest in moving image preservation.

Steve Greene
Archive Specialist
Nixon Presidential Materials Project
National Archives Building
7th St. and Pennsylvania Ave. N.W., Washington, DC 20408
(703) 756-6736

Archives film and Quad tapes from the Nixon administration (1969-1972). Collection dubbed onto 3/4", 1" and Betacam.

Ralph Hocking
Director
Experimental Television Center
180 Front St.
Owego, NY 13827
(607) 687-1423

Possesses extensive collection of archaic equipment (including playback decks, frame synchronizers, proc amps, etc.) and considerable expertise in the medium and its restoration.

Kate Horsfield
Executive Director
Video Data Bank
School of the Art Institute of Chicago
37 South Wabash Ave.
Chicago, IL 60603
(312) 443-3793

Engaged in preserving masters of video art and documentary work included in their distribution collection. Long-time advocate for video preservation.

International Federation of Film Archives (FIAF)
rue Franz Merjay 190
1180 Brussels Belgium

International Federation of Television Archives (FIAT)
RAI Televisione Administrativa GSA
via Cernaia 33
10121 Torino Italy
(11) 810-2626

Major standard-setting organizations for moving image archivists.

Carole Ann Klonarides
Video Curator
Long Beach Museum of Art
3200 East Ocean Blvd.
Long Beach, CA 90803
(310) 439-2119

Michael Nash conducted NCFVP pilot project to develop a cataloging model for video collections.

Alan Lewis
Assistant Branch Chief
Motion Picture Sound and Video Branch
National Archives
Washington, DC 20408
(703) 658-0192

Administers preservation activities of the branch; formerly a consultant in motion media preservation management who administered the archives for CBS News and PBS.

Barbara London
Video Curator
Museum of Modern Art
11 West 53rd St.
New York, NY 10019
(212) 708-9507

Expertise in the preservation of the museum's archival video collection and in-house study collection. Long-time advocate for video preservation.

Gregory Lukow
Deputy Director
National Center for Film and Video Preservation (NCFVP)
American Film Institute
2021 N. Western Ave.
Los Angeles, CA 90027
(213) 856-7637

Established in 1984 by the AFI and NEA to coordinate moving image preservation activities on a national scale. NCFVP supports the National Moving Image Database (NAMID) (*see also* Margaret Byrne), publishes the newsletter of the Association of Moving Image Archivists (AMIA), and administers grants, among other responsibilities.

Yvonne McLean
Association for Library Collections and Technical Services
American Library Association
50 East Huron St.
Chicago, IL 60611
(312) 280-5032 or (800) 545-2433 ext. 5032

Sponsors workshops on preservation strategies for collection management.

Rick Prelinger
Prelinger Associates, Inc.
430 West 14th St., Rm 403
New York, NY 10014
(212) 633-2134

Knowledgeable about North American film and videotape collections and repositories. Possesses a film archive which is made accessible through information databases such as *Footage 93*. Also is converting archival media into new formats like CD-rom.

Greg Rowland
President, New York Chapter ITVA
Take 1 Marketing
PO Box 573
Greenwich, CT 06836
(203) 531-0567; (800) 972-3988

ITVA can serve as a clearinghouse for information and resources since membership (8000 nationally) includes many who own obsolete tape machines or have expertise in working with specific formats.

Mark Schubin
Video Engineering Consultant
599 Eleventh Ave., 6th fl.
New York, NY 10036
(212) 315-2850

Television engineer, writer, teacher and consultant. Responsible for continuing operation of the "Sesame Street" videotape archive.

Steve Seid
Video Curator
Pacific Film Archive
University of California at Berkeley
2625 Durant Ave.
Berkeley, CA 94702
(415) 642-5253

Responsible for the video collection and involved in planning cooperation between the Archive and the Bay Area Video Coalition's proposed video preservation service.

Ron Simon
Television Curator
Museum of Television and Radio
25 West 52nd St.
New York, NY 10019
(212) 621-6600

Responsible for preservation of a collection of 50,000 programs, none of which are originals. Preservation copies are on D2 while access copies for viewing are on Hi8.

Dr. Don Staples
Department of Radio, Television and Film
University of North Texas
PO Box 13108
Denton, TX 76203
(817) 565-2537

Involved with film and video preservation at the National Museum of Communications near Dallas and at the University of North Texas. Knowledgeable about computer cataloging.

Jim Wheeler
Staff Engineer
Ampex
401 Broadway
Redwood City, CA 94063
(415) 367-3256

Experimental video engineer with expertise designing tests for video "archivability."

Lori Zippay
Executive Director
Electronic Arts Intermix
536 Broadway, 9th fl.
New York, NY 10012
(212) 966-4605

Knowledgeable about the archival preservation of distribution collection masters.

BIBLIOGRAPHY

BIBLIOGRAPHY

GENERAL: FILM AND VIDEOTAPE

Sargent, Ralph N. *Preserving the Moving Image.* Washington, DC: Corporation for Public Broadcasting (CPB) and the National Endowment for the Arts, 1974. (Available from CPB, 888 16th St. N.W., Washington, DC 20006)

Schou, Henning. *Preservation of Moving Images and Sound.* Brussels: International Federation of Film Archives (FIAF), 1989. (Available from FIAF, rue Franz Merjay 190, 1180 Brussels, Belgium)

Volkman, Herbert with Henning Schou, eds. *Preservation and Restoration of Moving Images and Sound.* Brussels: FIAF, 1986.

CATALOGING AND INFORMATION RETRIEVAL: FILM AND VIDEOTAPE

Barnett, Pat, ed. *The Clearinghouse Database on Art Documentation and Computerization.* New York: Office of Library Systems, Watson Library, Metropolitan Museum of Art.

Bearman, David, ed. *Archival Informatics Newsletter/Technical Reports.* (Available from Archive and Museum Informatics, 5600 Northcumberland St., Pittsburgh, PA 15217)

Crawford, Walt. *MARC for Library Use: Understanding the USMARC Formats.* White Plains, NY: Knowledge Industry Publications, 1984.

Evans, Linda J., and Maureen O'Brien Will. *MARC for Archival Visual Materials: A Compendium of Practice.* Chicago: Chicago Historical Society, 1988.

Gartenberg, Jon. *Film Cataloging Manual: A Computer System.* New York: Museum of Modern Art, 1979.

—, *Glossary of Filmographic Terms.* 2nd enlarged edition. Brussels: FIAF, 1989.

Gorman, Michael and Paul W. Winkler. *Anglo-American Cataloging Rules, Second Edition (AACR2).* Chicago: American Library Association (ALA), 1978. (Available from ALA, 50 East Huron St., Chicago, IL 60611)

Harrison, Harriet W., comp. and ed. *The FIAF Cataloging Rules for Film Archives.* (Film—Television—Sound Archive Series, Vol. 1) New York: K.G. Saur, 1991.

International Federation of Film Archives, Cataloging Commission. *Film Cataloging.* New York: Burt Franklin, 1979.

Library of Congress. *Authorities: A MARC Format.* Washington, DC: Library of Congress, Automated Planning and Liaison Office, 1981- (looseleaf for update)

Library of Congress. *MARC Formats for Bibliographic Data.* Washington, DC: Library of Congress, Automated Systems Office, 1980- (looseleaf for update)

Phoenix Systems. *Considerations in Selecting Computer Systems.* 1989. (Available from Phoenix Systems, Inc., 1700 North Moore St., Suite 1705, Arlington, VA 22209)

Smither, Roger. *Third FIAF Study on the Usage of Computers for Film Cataloging: FIAF Computerisation Survey 1989/90.* Brussels: FIAF, April 1990.

White-Hensen, Wendy, comp. *Archival Moving Image Materials: A Cataloging Manual.* Washington, DC: Library of Congress, Motion Picture, Broadcasting and Recorded Sound Division, 1984. (Available through catalog distribution service of Library of Congress.)

Yee, Martha, comp. *Moving Image Materials: Genre Terms.* Washington, DC: Library of Congress, Cataloging Distribution Service, 1988. Compiled for NAMID Standards Committee, National Center for Film and Video Preservation (NCFVP). (Available from NCFVP, PO Box 27999, 2021 North Western Ave., Los Angeles, CA 90027)

VIDEOTAPE PRESERVATION: COLLECTIONS

Blumenthal, Lynn. "Re:Guarding Video (Preservation)," *Afterimage,* February 1986, p11-15.

Chach, Maryann. "Video Collection Management: A Workshop Report," *Sightlines,* Summer 1984, p28-30.

Grace, Sharon. "Video Tape Survival: The Cleaning, Time Base Correcting and Reformatting of Deteriorating Video Tape for *Reel to Reel: Artists' Video 1970-72," Video Networks* (Bay Area Video Coalition), 9:3 April-May 1985, p1, 4-5.

Greenfield, Amy. "The Case of the Vanishing Videotape," *American Film,* July-August 1981, p17-18.

Lewis, Alan. "Using Consultants in Film/Video Archives," *Footage 89: North American Film and Video Sources,* New York: Prelinger Associates, p A33-A34.

Rotondi, Rosemary. "Video Preservation: Inventing the Wheel at Electronic Arts Intermix," *Media Arts,* Spring-Summer 1990, p7-8.

Scholtz, James C. *Developing and Maintaining Video Collections in Libraries.* Santa Barbara, CA: ABC-CLIO, 1989.

VIDEOTAPE PRESERVATION: TECHNOLOGY

Ampex Corporation. *A Guide to Media and Formats.* 2nd edition. Redwood City, CA: Ampex, 1989. (Available from Ampex, Magnetic Tape Division, 401 Broadway, Redwood City, CA 94063)

—, *Magnetic Tape Glossary.* Ampex, undated.

—, *Care & Handling of Magnetic Tape.* Ampex, 1990.

Bertram, H. Neal and Edward F. Cuddihy. "Kinetics of the Humid Aging of Magnetic Recording Tape," *Institute of Electric and Electronics Engineers (IEEE) Transactions on Magnetics,* 18:5 September 1982, p993-999.

Bertram, H. Neal and A. Eshel. *Recording Media Archival Attributes (Magnetic).* Ampex, Report RR-90-01, 1979.

Bertram, H. Neal, Michael K. Stafford, and David R. Mills. "The Print-Through Phenomenon," *Journal of the Audio Engineering Society,* 28:10 October 1980, p690-705.

Brown, D.W., R.E. Lowry, and L.E. Smith. *Predictions of Long-Term Stability of Polyester-Based Recording Media.* National Bureau of Standards Institute Report 86-374. Progress report to June 1986. Washington, DC: National Bureau of Standards, 1986.

Camras, Marvin. *Magnetic Recording Handbook.* New York: Van Nostrand Reinhold Co., 1988.

Conrad, Tony. "Open Reel Videotape Restoration," *The Independent,* October 1987, p12.

Cuddihy, Edward F. "Aging of Magnetic Recording Tape." *IEEE Transactions on Magnetics,* 16:4 July 1980, p558-68.

—, "Magnetic Recording Tape: A Discussion of the Material Properties of Tape Having Relevance to the Storage, Performance, and Systems Effects," *Communication,* 1982.

Dunn, David, ed. *Eigenwelt der Apparatewelt: Pioniere der Elektronischen Kunst/The Apparatus World: Pioneers of Electronic Art.* Linz, Austria: Ars Electronica, 1992. (Available from: The Vasulkas, Inc., Route 6, Box 100, Santa Fe, NM 87501)

Empusucha, James. "Common Sense Preservation: A Videotape and Film Fact Sheet." (Available from National Center for Film and Video Preservation.)

Hayman, Randy. "Archiving Videotape," *Audiovisual Communication,* March 1991, p21-25.

Legge, Nancy, comp. and ed. *Access—Film and Video Equipment: A Directory,* Washington, DC: The American Film Institute, 1978.

Meigs, James B. "How Long Will Videotape Really Last?" *Video Review,* July 1984, p24-26.

National Archives and Records Administration (NARA). Advisory Committee on Preservation. Ad Hoc Sub-committee on the Preservation of Video Recordings. "Minutes of Meeting, July 28-29, 1989." Washington, DC: NARA, 1989.

Parson, Douglas. "Videotape Conservation and Restoration: Usual Defects, Possible Remedies," *Minutes and Working Papers of the FIAT/IFTA 6th General Assembly, 29 September-1 October, 1986, Montreal.* Madrid: International Federation of Television Archives (FIAT/IFTA), 1987.

Richmond, Joseph C. *Transfer of Monochrome Video Information from Magnetic Tape to Motion Picture Film for Archival Storage.* Washington, DC: U.S. Department of Commerce, Bureau of Standards, 1978.

Schubin, Mark. "Videotape—The Untold Story," *Videography*, November 1987, p34-35.

Shulman, David. "Deja View: Restoring and Remastering Open-Reel Videotapes," *The Independent*, October 1991, p32-35.

3M Company. "Videocassette Tape Physical Damage," *Retentivity*. (Available from 3M Company, Magnetic Audio/Video Products Division, 3M Center, Building 223-5N, St. Paul, MN 55101)

—, "The Handling and Storage of Magnetic Recording Tape," *Retentivity*.

—, "Magnetic Tape Erasure—How Serious Is The Threat?," *Retentivity*.

—, "Audio Variability on Worn Head States," *Technical Bulletin*, 1990.

—, "Error Rates and D2 Digital Video Tape," *Technical Bulletin*, 1991.

—, "Evaluating the Evaluators," *Technical Bulletin*, 1990.

—, "Magnetic Tape Recording: Forever?," *Technical Bulletin*.

—, "Temperature and Humidity Recommendations for VTR Facilities," *Technical Bulletin*.

—, "The Day After Magnetic Storage," *Technical Bulletin*.

Wheeler, Jim. "Videotape Storage: How to Make Your Videotapes Last for Decades...or Centuries," *American Cinematographer*, 64:1 January 1983, p23-25.

—, "Long Term Storage of Video Tape," *SMPTE Journal*, June 1983, p650-654.

—, "Maximizing Tape and VTR Reliability," Ampex, April 6, 1984.

—, "Maximizing the Life of Beta™ and VHS™ Videocassette Tape," Ampex, April 20, 1987.

—, "Increasing the Life of Your Audio Tapes," Ampex, May 20, 1987.

Woodward, J.G. "Stress Demagnetization in Videotapes," *IEEE Transactions on Magnetics*, 18:6 November 1982, p1812-1817.

MISCELLANEOUS

Bowling, Mary B. "Literature on the Preservation of Nonpaper Materials," *The American Archivist*, 53:2 Spring 1990, p340-348.

Boyle, Deirdre, "Video Preservation: Insuring the Future of the Past," *The Independent*, October 1991, p25-31.

International Federation of Television Archives (FIAT). *Guide to Audiovisual Archives.* Helsinki: YLE TV Archives for FIAT, 1990.

International Federation of Television Archives (FIAT). *Minutes and Working Papers of the FIAT-IFTA VIIIth General Assembly and International Video Library Forum, November 5-8, 1990 Tokyo, Japan.* Torino: RAI Radiotelevisione Italiana, 1991.

National Association of Government Archives and Records Administrators. *Guide and Resources for Archival Strategic Preservation Planning.* Albany: NAGARA, 1991. (Also available through the Society of American Archivists, Chicago, IL.)

Prelinger, Richard and Celeste R. Hoffman, eds. *Footage 89: North American Film and Video Sources.* New York: Prelinger Associates, Inc., 1989.

—, *Footage 91: North American Film and Video Sources.* New York: Prelinger Associates, Inc., 1991.

Rice, John, ed. *HDTV: The Politics, Policies and Economics of Tomorrow's Television.* New York: Union Square Press, 1990.

Saintville, Dominique, ed. *Panorama of Audiovisual Archives: A Contribution to the Development of International Film and Video Archive Practice.* London: FIAT/BBC Data Publications, 1986.

United Nations Educational, Scientific and Cultural Organization, General Information Programme and UNISIST. *Curriculum Development for the Training of Personnel in Moving Image and Recorded Sound Archives.* Paris: UNESCO, 1990.

ABOUT THE AUTHOR

Deirdre Boyle discovered video in 1973 and studied portapak production with the Videofreex. Today she is a writer, curator, teacher, and consultant specializing in independent video and film. She is a senior faculty member in the graduate Media Studies program at The New School for Social Research in New York and the author of over 100 essays and editor of seven books, including *Video Classics: A Guide to Video Art and Documentary Tapes* (Oryx Press, 1986). She is writing a book about guerrilla television for Oxford University Press.

Ms. Boyle has organized video exhibitions for museums, galleries, universities, and television systems in the United States, Canada, Belgium, Spain, Italy, Finland, Russia, India, and Japan. She has been a consultant to numerous public funding agencies, private foundations, and professional associations. She received the ACE Award for best documentary series on cable television in 1988. She is a past Guggenheim Fellow and in 1992 was awarded a Fulbright Fellowship to lecture on video at Moscow State University.

VIDEO PRESERVATION:
SECURING THE FUTURE OF THE PAST

by Deirdre Boyle

Published by Media Alliance
New York, New York

ORDER NOW!
PUBLICATION TO BE RELEASED JUNE 1993

- **An Overview of Video Collections and Preservation Efforts in the U.S.**
- **Answers to Questions about Technical, Managerial and Philosophical Issues**
- **Ideas for Initiatives and Funding to Secure the Treasury of Video History**
- **Glossary of Video Terms**
- **Facilities that Clean and Remaster Videotape**
- **Resource List of People with Expertise in Video Preservation and Archiving**
- **Bibliography**

Media Alliance's initiative to address the critical issue of video preservation has involved assessing the state of video preservation, coordinating an exchange of information among interested parties, promoting collaborative solutions to common problems, and stimulating national attention to the issue.

Now, through *Video Preservation: Securing the Future of the Past,* the information and ideas are available for independent producers, librarians, archivists, media arts centers, college and university media centers, libraries, community and performing arts groups, and others.

Author Deirdre Boyle is a curator, teacher, writer and consultant specializing in independent video and film. She is the author of over 100 essays and editor of seven books, including *Video Classics: A Guide to Video Arts and Documentary Tapes* (Oryx, 1986) and is currently writing a history of guerrilla television for Oxford University Press. Ms. Boyle received an ACE award for best documentary series on cable in 1988, is a past Guggenheim Fellow and in 1992 was awarded a Fulbright Fellowship to lecture on video at Moscow State University.

ORDER FORM

Yes! Please send _____copies of *Video Preservation: Securing the Future of the Past* (66 pp.) @ $20.00 ($16.00 Media Alliance Members) each, plus $2 shipping and handling charge (New York State residents add 8.25% sales tax or provide a tax-exempt letter). A discount of 20% may be applied for more than ten copies. *Please make checks payable to Media Alliance.*

Name _____ Organization _____

Address _____ City _____ State _____ Zip _____

Phone _____ Date _____

Book: $_____

Handling: $ 2.00

Tax: $_____

Total Enclosed: $_____

For more information contact:
Media Alliance
c/o Thirteen/WNET
356 West 58th Street, New York, NY 10019
(212) 560-2919

Media Alliance is a nonprofit organization dedicated to advancing the independent media arts in New York State. Media Alliance works to develop the media arts field in all its diversity by: expanding resources, support, and outlets for electronic and related media; facilitating networking and information-sharing about issues and opportunities; and providing programs and services which directly respond to membership needs.

SCUA
WEA
395